USSR/Chemistry - Medicine Apr 52

"Science to the People," Acad A. N. Nesmeyanov, Pres, Acad Sci USSR

"Priroda" No 4, pp 3-6

In connection with 1951 Stalin Prize awards, draws parallel between peaceful endeavors in the USSR and scientific activity in the US which led to "dropping by US armed forces over Korea and China of fleas, grasshoppers, sandflies, birds, and bats infected with bacteria of plague, cholera, and typhus." As outstanding new USSR achievements, mentions new syntheses of emetine and pilocarpine

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PREOBRAZHENSKIY, N.A.

(by N. A. Preobrazhenskiy), synthesis of promedol (anesthetic which is much more effective than morphine and less toxic), conquest of smallpox, plague, cholera, syphilis, malaria, and tayga tick-born encephalitis, V. A. Negovskiy's work on reviving dead people by intraarterial transfusion of blood contg glucose and adrenalin (accompanied by intravenous blood transfusion and artificial respiration), etc.

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PRELIMINARY, U.M.

(6)

Isoquinoline compounds. V. Synthesis of the natural alkaloid, emetine. R. P. Evstigneeva, R. S. Livshits, M. S. Dalnova, L. I. Zakharkin, and N. A. Preobrazhenskii (Moscow Inst. Fine Chem. Technol.). *J. Gen. Chem. U.S.S.R.* 22, 1511–16(1952)(Engl. translation). See *C.A.* 47, 5949c.

Chemical Abst.
Vol. 47 No. 9
May 10, 1953
Organic Chemistry

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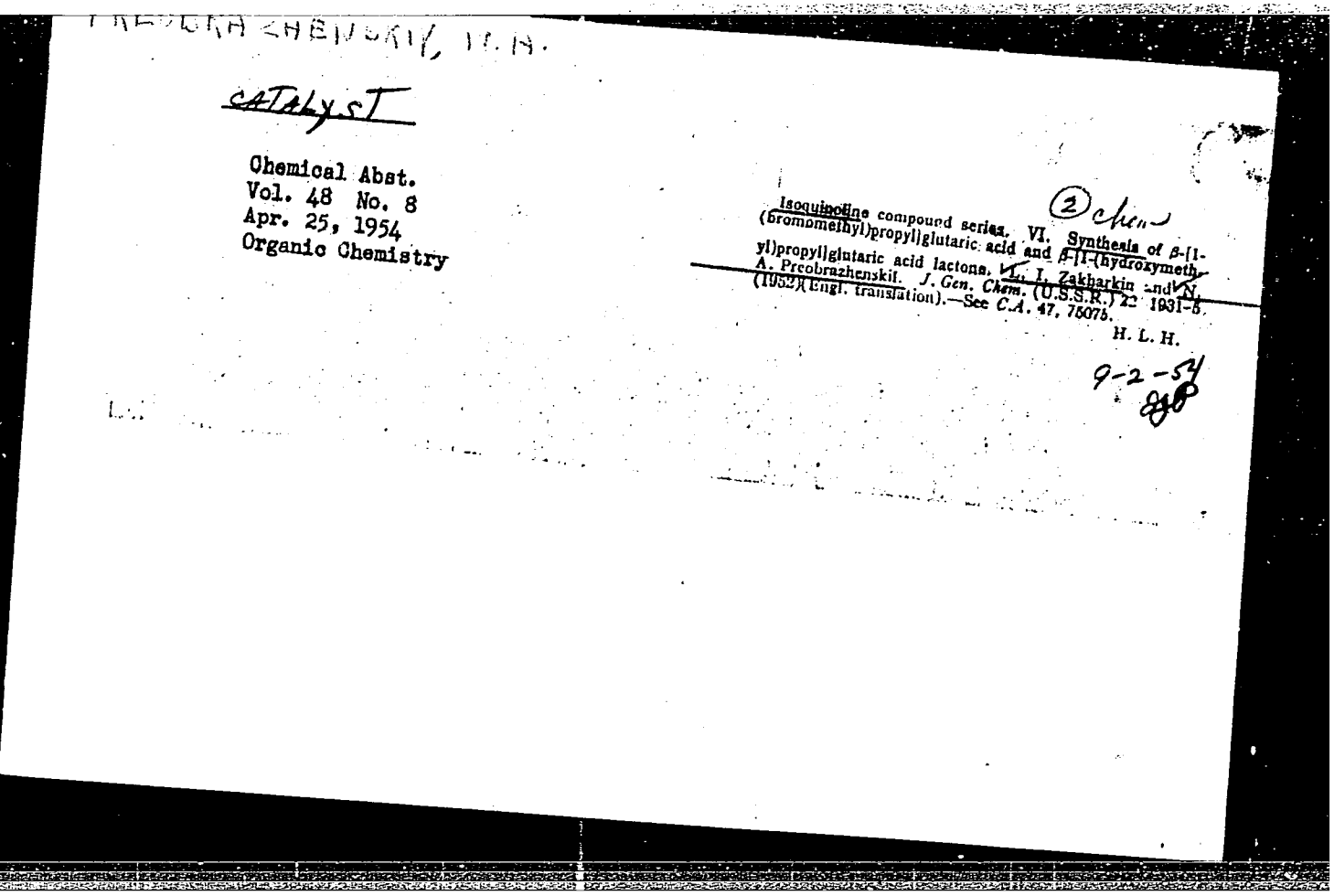
ZAKHARKIN, L.I.; PREOBRAZHENSKIY, N.A.

Isoquinoline compound series. VI. Synthesis of β-[1-(bromomethyl) propyl] glutaric acid and β-[1-hydroxymethyl)propyl]glutaric acid lactone. Zhur. Obshchey Khim. 22, 1890-5 '52. (MLRA 5:11) (CA 47 no.15:7507 '53)

1. M.V. Lomonosov Fine Chem. Tech.Inst., Moscow.



PREOBRAZHENSKII, N.A.

catalyst

Chemical Abst.
Vol. 48 No. 8
Apr. 25, 1954
Organic Chemistry

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Isoquinoline compound series. VI. Synthesis of β-[1-(bromomethyl)propyl]glutaric acid and β-[1-(hydroxymethyl)propyl]glutaric acid lactone. V. I. Zakharkin and N. A. Preobrazhenskii. *J. Gen. Chem.* (U.S.S.R.) 22: 1931-5 (1952)(Engl. translation).—See *C.A.* 47, 7507b.

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9-2-54

1. ZAKHARKIN, L. I., PREOBRAZHENSKIY, N. A.

2. USSR (600)

4. Isoquinoline

7. Isoquinoline compounds. Part 8. Condensation of dl-aubstituted β-proplglutaric acids with homoveratrylamine. Shur. ob. khim. 23 no. 1, 1952

9. Monthly List of Russian Accessions, Library of Congress, June 1953. Unclassified.

SAMOKHVALOV, G.I., STRIGTSEVA, V.YE., [illegible], YE. I., PREOBRAZHENSKIY, N.A.

Methyltetradecanoic Acid

Synthesis of 14-methoxy-3-methyltetradecanoic acid and its analogs, initial substances for the preparation of macrocyclic ketones and lactones. Dokl. AN SSSR 84 No. 4, 1952.

Monthly List of Russian Accessions, Library of Congress, October 1952. UNCLASSIFIED

PREOBRAZHENSKIY, N.A.; GENKIN, E.I. [deceased]

[Chemistry of organic drugs; heterocyclic compounds and their analogs] Khimiia organicheskikh lekarstvennykh veshchestv; geterotsiklicheskie soedineniia i ikh analogi. Moskva, Gos. nauchno-tekh. izd-vo khim. lit-ry, 1953. 592 p. (MLRA 7:5)

(Heterocyclic compounds) (Chemistry, Medical and pharmaceutical)

PREOBRAZHENSKIY, N.A.

6

C1

Chemical investigations in the field of vitamin A. I. Structure of the condensation products of β-ionone with γ-bromocrotonic acid esters by the Reformatskiĭ reaction. G. I. Samokhvalov, M. A. Miropol'skaya, L. A. Vakulova, and N. A. Preobrazhenskiĭ. *Trudy, Vsesoyuz. Nauch.-Issledovatel. Vitamin. Inst.* 4, 5–10(1953).—The Reformatskiĭ reaction of β-ionone (n_D^{20} 1.5192; purified through semicarbazone, m. 146°) and $BrCH_2:CHCO_2R$ in the course of the Dorp and Arens synthesis of vitamin A proceeds through R'CH:CHCMe(OZnBr)$CH_2CH:CHCO_2R$ (I), where R' = 6,6-dimethyl-1-cyclohexen-1-yl, which is readily decompd. to R'CH:CHCMe:CHCH:$CHCO_2R$ (II). On standing, the C_6H_6 soln. yields a yellow-green ppt. consisting of an org. complex contg. Zn (Zn 31.7, Br 38.4, and the org. residue 10.2%, resp.) which polymerizes on vacuum distn. I treated with dil. AcOH hydrolyzes to an ester (IV) which saponc. to II (R = Me), m. 161.5–2.5°, absorption max. 324. IV by chromatography through an Al_2O_3 column was shown to be nonhomogeneous. II. Synthetic reactions in the field of polyenic compounds with the aid of metal organic derivatives of alkoxyvinyl acetylenes. G. I. Samokhvalov, I. A. Rubtsov, M. A. Miropol'skaya, and N. A. Preobrazhenskiĭ. *Ibid.* 10–13.—By the method by A. A. Petrov (*C.A.* 35, 3503[9]) $RCH_2CH:CMeCHO$ (I) (R = $Me_3C.CH_2.CH_2.CMe:C$—) was condensed with LiC:CC(OEt):CH_2 (II) to give RCH:CH:CMeCH(OH)C:CC(OEt):CH_2 (III) which with 1% H_2SO_4 in alc. yielded RCH:CHCMe:CHC:CAc (IV); *semicarbazone*, m. 200–1°. The conjugated system of the unsatd. bonds of IV is shown by a characteristic ultraviolet absorption max. at 384 mμ ($\log \varepsilon = 4.17$). Upon hydrogenation of the acetylenic group of IV the compd. RCH:CHCMe:CHCH:CHAc (V) was obtained which was used for the synthesis of vitamin A (VI) by treatment with BrMgC:COEt to give RCH:CHCMe:CHCH:CHCMe(OH)C:COEt from which was prd. I. reduction of VII gave VI. The mechanism of the reaction of polyenic carbonyl compds. with metal-org. derivs. of alkoxyvinylacetylenes to form new polyenic conjugated carbonyl compds. is discussed.

E. Wierbicki

PREOBRAZHENSKIY, N.A.

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The pyrimidine component of vitamin B_1. I. A. Rubtsov, M. V. Batyakina, E. V. Zaftseva, and N. A. Preobrazhenskii, *Trudy, Vsesoyuz. Nauch.-Issledovatel. Vitamin Inst.* 4, 20–3(1953).—Three new modifications of the synthesis of the pyrimidine component of vitamin B_1 are presented: (*1*) synthesis of 2-methyl-4-amino-5-cyanopyrimidine (I) from $AcOCH:C(CN)_2$ (II), or (*2*) from $EtOCH:C(CN)_2$ (III) by the condensation with acetamidine (IV), and (*3*) synthesis of 2-methyl-4-amino-5-carbethoxypyrimidine (V) from $H_2NCH:C(CN)CO_2Et$ (VI) and $MeCSNH_2$ (VII). V is also readily obtained by condensation of $EtOCH:C(CN)CO_2Et$ (VIII) with IV. $CH_2(CN)_2$ (IX) condenses readily with esters of formic acid in the presence of K or Na alcoholates, forming 90% $HOCH:C(CN)_2$ (X), non-[illegible]vable by H_2O, neutral reaction in H_2O. X and [illegible].HCl [illegible] an addnl. compd., X.IV, m. 63–5° (decompn.). Wh[illegible] f X formed II, a heavy oil, readily turning brown on standing, b_{4-5} 102–4°, $n^{20}D$ 1.4818, d_{20} 1.1835, requiring 2 moles alkali for titration. The pyrimidine component of vitamin B_1 is more readily synthesized by *3*, since VII is obtained more easily than IV. The intermediate product VIII reacts quantitatively with aq. NH_3 solns., forming VI, m. 140–2°; by treating VI with $LiAlH_4$ in Et_2O 2-methyl-4-amino-5-hydroxymethylpyrimidine is obtained (57–60%), which can be used further for the synthesis of vitamin B_1.

E. Wierbicki

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PREOBRAZHENSKIY N.A.

6

CH

Reaction of acrylonitrile with esters of formic and oxalic acids. I. A. Rubtsov, M. V. Balyakina, E. S. Zhdanovich, and N. A. Preobrazhenskii. *Trudy, Vsesoyuz. Nauch.-Issledovatel. Vitamin. Inst.* 4, 23 6(1953).—The condensation of acrylonitrile (I) with HCO_2R (II) and $(CO_2R)_2$ catalyzed with R'ONa (III) are described and mechanisms proposed. Thus were prepd. from I, II, and III the following (R, R', % yield, and b. p. of acetate given): Me, Me, 61.7, 102-8°/5 mm.; Et, Et, 58.9, 103-5°; Me_2CH, Me_2CH, 53.7, 108-10°; Me_2CHCH_2, Me_2CHCH_2, 53, 116-18°; iso-Am, iso-Am, —, 118-20°; iso-Am, Me, —, 98-126°; iso-Am, Et, —, 103-10°; Et, Me_2CHCH_2, —, 107-10°; Me, iso-Am, —, 108-14°/5 mm.; Et, iso-Am, —, 103-8°. Similarly the condensation of I with $(CO_2Me)_2$ catalyzed by MeONa gave 37.8% of $MeCH_2C(CN):C(ONa)CO_2Me$, red-brown substance, forming, with AcCl, $MeCH_2C(CN):C(OAc)CO_2Me$, oil, b_4 135-40°, $n^{20}D$ 1.4672.

E. Wierbicki

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Isoquinoline compounds. VII. Synthesis of 3-[(1,1-dimethoxymethyl)propyl]glutaric acid. M. S. Baimova, R. P. Evstigneeva, R. S. Liyshits, K. K. Kuz'mina, and N. A. Preobrazhenskii (M. V. Lomonosov Inst. Fine Chem. Technol., Moscow). *Zhur. Obshchei Khim.* 23, 1[illegible] (1953); cf. *C.A.* 47, 7375.—Heating 60 g. $PrCH(CO_2H)_2$, 40 ml. pyridine, and a few drops piperidine 3 hrs. at 60–70° and 3 hrs. at 110° gave 70% $PrCH:CHCO_2H$, b$_5$ 98–102°, m. 34–5°. Heated with EtOH and H_2SO_4 it gave 76% Et ester, b. 174–5°. This (80 g.) and 50 g. HCO-Et added to 13 g. Na in 400 ml. MePh and allowed to stand 1 day gave a ppt. of *Na deriv.* of $EtCH(CHO)CH:CHCO_2Et$, which treated with ice, the aq. soln. extd. with C_6H_6 and the aq. layer acidified with H_3PO_4 to Congo red and extd. with Et_2O gave, on evapn. of Et_2O, 54% crude $EtCH(CHO)CH:CHCO_2Et$ (I); this distd. in *N* atm. in the presence of a little urotropin, b$_1$ 65–70°, d_4^{20} 1.0412, n_D^{20} 1.4648; the product gives violet color with $FeCl_3$ and its *MR*$_D$ indicates that it is nearly all oxo form. The product tends to polymerize on repeated distn. The Na deriv. of the above ester (11 g.), 12 g. abs. EtOH, and 45 ml. Et_2O satd. with HCl (4.6 g. added) were stirred with cooling 2 hrs., then 14 hrs. at room temp., neutralized with $NaHCO_3$, filtered, and distd., yielding 30.5% $EtC(:CHOEt)CHCl\cdot CH_2CO_2Et$ (II), b$_8$ 68–78°, d_{20}^{20} 0.9927, n_D^{20} 1.4459. I (5 g.) and 4.35 g. $HC(OEt)_3$ treated with 0.1 g. NH_4Cl in 2 ml. abs. EtOH and heated on steam bath 30 min., allowed to stand overnight, decanted and the soln. treated with 2 vol. Et_2O and washed with 5% NH_4OH gave on distn. of the org. layer 35.6% $EtCH[CH(OEt)_2]CH:CHCO_2Et$ (III), b$_{0.4}$ 78–83°. To EtONa from 4 ml. EtOH and 0.22 g. Na was added at 30–40° 3 g. $CH_2(CO_2Et)_2$, kept 30 min. and treated with 2 g. II and heated 5 hrs.; after concn. and treatment with H_2O the org. layer gave 55.7% $EtC(:CHOEt)\cdot CH[CH(CO_2Et)_2]CH_2CO_2Et$, b$_{2.5}$ 148–9°. To 0.6 g. Na in 10 ml. EtOH was added 7.8 g. $CH_2(CO_2Et)_2$ and 6 g. III and heated on water bath 5 hrs.; after usual aq. treatment there was obtained 48.3% $EtCH[CH(OEt)_2]CH[CH(CO_2Et)_2]CH_2CO_2Et$, b$_1$ 160–3°. This (5.5 g.) refluxed with 4.6 g. KOH, 45 ml. H_2O and 45 ml. MeOH 5 hrs., concd.,

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chilled, acidified with HCl and extd. with Et_2O gave 37% *EtCH[CH(OEt)]CH(CH₂CO₂H)₂*, b₁ 153-7°. VIII. Condensation of substituted β-propylglutaric acids with homoveratrylamine. <u>I. I. Zakharkin</u> and N. A. Preobrazhenskii (M. B. Lomonosov Inst. Fine Chem. Technol., Moscow). *Ibid.* 153-5.—Letting 1.5 g. *γ-ethyl-β-carboxy-γ-methoxyadipic acid* (I) stand with 5 ml. $SOCl_2$ 2 hrs. gave the corresponding *acyl chloride*, b₁ 137-8°, in 47% yield. This (3.7 g.) in C_6H_6 added to 3.1 g. homoveratrylamine and 1.7 g. pyridine in C_6H_6 and stirred 1 hr., then treated with H_2O gave 88% *corresponding N-homoveratryl-lactamide*, $C_{21}H_{31}O_7N$, a viscous oil. This (5 g.), 7.5 ml. $POCl_3$ and 50 ml. MePh refluxed 1 hr., decanted, the residue treated with 30 ml. dil. HCl, the soln. freed of tar and treated with NaI soln. and extd. with $CHCl_3$ gave 52% yellow *γ-ethyl β-[(3,4-dihydro-6,7-dimethoxy-1-isoquinolyl)methyl]-6-iodovalerolactone-HI*, m. 190-201° (from EtOH); *picrate*, m. 181-2°. I in EtOH satd. with dry HBr at 0° gave after 1.5 days 72% *EtO₂CCH₂CH(CHEtCH₂Br)CH₂CO₂Et*, b₁ 140-1°, n_D^{25} 1.4628, which (5 g.) with 12 g. homoveratrylamine in MeOH and reflux 2.5 hrs. gave *Et N-homoveratryl-6-ethyl-2-piperidone-γ-acetate*, b₁ 227-31°, 21.6%. Heating I (3 g.) with 8 g. homoveratrylamine 4 hrs. at 190-200° gave 68% *dihomoveratrylamide* of *β-(α'-hydroxyanthyl)propylglutaric acid*, $C_{31}H_{48}O_7N_2$, a viscous oil. Heating *HO₂CCH₂CH(CHEtCH₂Br)CH₂CO₂H* with $SOCl_2$ 2 hrs. at 50° gave the *acyl chloride*, 77.5%, b₁ 141-3°, which added in C_6H_6 to homoveratrylamine with cooling gave 83% *dihomoveratrylamide* of *β-(α'-bromomethyl)-propylglutaric acid*, a viscous oil (from EtOH-Et_2O). The products are intermediates for synthesis of *cuctine*.

G. M. Kosolapoff

PREOBRAZHENSKII, N. A.

"Isoquinoline compounds. Part 8. Condensation of a' -substituted B -propylglutaric acids with homoveratrylamine". Zakharkin, L. I. and Preobrazhenskii, N. A. (p. 153)

SO: Journal of General Chemistry (Zhurnal Obshchei Khimii). 1953, Volume 23, No. 1.

PREOBRAZHENSKIY, N. A.

Chemical Abst.
Vol. 48 No. 6
Mar. 25, 1954
Organic Chemistry

Isoquinoline compounds. IX. Synthesis of 1-(3-methyl-2-oxo-5-piperidyl)-2-(3,4-dihydro-6,7-dimethoxy-1-isoquinolyl)ethane and the ester of 1-homoveratryl-3-methyl-2-oxo-5-piperidinepropionic acid. L. I. Zakharkin and N. A. Preobrazhenskii (M. V. Lomonosov Fine Chem. Technol. Inst., Moscow). *Zhur. Obshchei Khim.* 23, 518-20(1953); cf. *C.A.* 45, 7577c; 48, 1361e, 2727i.—Adding 50.5 g. EtO_2CCH_2CN to 11.5 g. Na in 170 ml. EtOH, then 60 g. $MeO_2CCMe{:}CH_2$, heating 1 hr., adding 70 g. $ClCH_2CH_2CO_2Et$ with cooling, and heating 2 hrs. gave 81% $MeO_2C\cdot CHMeCH_2C(CN)(CO_2Et)CH_2CH_2CO_2Et$, b_5 197-9° $n^{25}D$ 1.4503. This (50 g.) added to 3.7 g. Na in 50 ml. EtOH and 2.9 g. H_2O, the mixt. kept overnight, concd. *in vacuo*, dild. with H_2O, extd. with C_6H_6, the aq. layer acidified with HCl, and the pptd. oil decarboxylated at 170-5°, gave 57.2% $MeO_2CCHMeCH_2CH(CN)CH_2CH_2CO_2Et$ (I), b_{14} 183-6°, $n^{25}D$ 1.4431. This (19.2 g.), hydrogenated 1 hr. over Ni in EtOH at 110° and 150 atm. gave 80.5% *Et 3-methyl-2-oxo-5-piperidinepropionate*, b_3 163-5°, $n^{25}D$ 1.4830, saponf. with 1 equiv. of alc. KOH to the free *acid*, m. 159-60°. The Et ester (3 g.) heated with 2.6 g. $3,4\text{-}(MeO)_2C_6H_3CH_2CH_2NH_2$ (II) 4 hrs. at 180-5° gave 79.2% corresponding *N*-(3,4-dimethoxyphenethyl)amide (III), oil; simil. was obtained the *N-phenethylamide*, m. 163-5° (from EtOH). III (1.8 g.) heated 1 hr. in MePh with 4 ml. $POCl_3$, the ppt. sepd., taken up in H_2O, and the soln. made alk. with NH_4, and extd. with C_6H_6 gave 61.5% *1-(3-methyl-2-oxo-5-piperidyl)-2-(3,4-dihydro-6,7-dimethoxy-1-isoquinolyl)ethane*, m. 165.5-6.5° (from C_6H_6). I (10 g.) added to 2.21 g. Na in 50 ml. EtOH and 1.72 ml. H_2O, heated 4 hrs., and acidified, gave 92% *2-methyl-4-cyano-4 carboxypimelic acid*, decomp. 169-70°, which, heated to 170-80°, lost CO_2 and gave glassy *2-methyl-2,6-dioxo-5-piperidinepropionic acid*. Hydrogenation of 10 g. I 2 hrs. over Raney Ni in EtOH in the presence of 40 g. II at 105-10° and 150-60 atm. gave 22.9% Et *1-(3,4-dimethoxyphenethyl)-3-methyl-2-oxo-5-piperidinepropionate*, b_1 225-9°. X. Synthesis of 1-[2-(-decyl-3-

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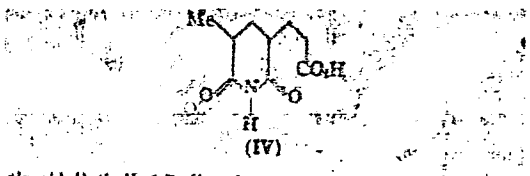

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piperidyl)ethyl]-6,7-dimethoxy-1,2,3,4-tetrahydroisoquinoline. R. S. Livshits, M. S. Belnova, S. D. Kupriyanova, and N. A. Preobrazhenskii (M. V. Lomonosov Fine-Chem. Technol. Inst., Moscow). *Ibid.*, 522–4.—Heating 7 g. $C_6H_{11}I$ with 4.4 g. *Et 3-pyridinepropionate* 2 hrs. at 100–5° and 15–20 mm. gave 92.5% *quaternary salt*, $C_{14}H_{16}O_2NI$, yellow oil. This (10 g.) hydrogenated in EtOH in the presence of a little AcOH and PtO_2 gave 90.8% *Et 1-decyl-3-piperidinepropionate-HI*, m. 89–90°, which in $CHCl_3$ with NH_3 gave the free *ester*, b_3 194–5°, $n^{20}D$ 1.4639, d^{20}_4 0.913[illegible]. This (2 g.), 2.2 g. $3,4\text{-}(MeO)_2C_6H_3CH_2CH_2NH_2$, and a little pyridine heated 2 hrs. at 180–5° gave 70% *N-(3,4-dimethoxyphenethyl)-1-decyl-3-piperidinepropionamide*, m. 89–90° (from petr. ether). This (2 g.) heated with 14 ml. $POCl_3$ in dry MePh 2 hrs. at 80° gave 0.8 g. yellow oil, yielding a *picrate*, m. 162–3°, of *1-[2-(1-decyl-3-piperidyl)ethyl]-6,7-dimethoxy-3,4-dihydroisoquinoline*. This (1 g.) reduced in 30 ml. H_2O with 5 g. Zn dust and 3 ml. H_2SO_4 gave 70% *1-[2-(1-decyl-3-piperidyl)ethyl]-1,2,3,4-tetrahydro compd.*, isolated as the *di-HCl salt*, m. 165–62°, shrinking at 100–2°. XI. Synthesis of 1-[2-(3,4-dimeth-

oxyphenethyl)-3-piperidylethyl]-6,7-dimethoxy-1,2,3,4-tetrahydroisoquinoline. R. S. Livshits, M. S. Belnova, A. I. Gurevich, and N. A. Preobrazhenskii. *Ibid.*, 5[illegible]. Reduction of 20 g. $(MeO)_2C_6H_3CH_2CO_2Et$ with 16.[illegible] Na in EtOH gave 84.75% *2-(3,4-dimethoxyphenyl)ethanol*, m. 47–8°, b_{10} 172–3°. This (5 g.) heated with 25 g. P[illegible], 2 hrs. on steam bath gave 72.8% *corresponding bromide*, b. 150–5°. This (4.8 g.) and 4 g. *Et 3-pyridinepropionate* heated 2 hrs. at 8–10 mm. to 105–10° and the product pptd. from EtOH with Et_2O gave 99.3% *corresponding quaternary salt*, $C_{22}H_{30}O_4NBr$, sol. in H_2O and EtOH. This (9.25 g.) in [illegible] ml. EtOH and 1 ml. AcOH hydrogenated 2–3 hrs. over Pt oxide at 1.9 atm. yielded 97.4% *Et 1-(3,4-dimethoxyphenethyl)-3-piperidinepropionate-HBr*, m. 142–3°, which in $CHCl_3$ with NH_3 gave the free *ester*, b_3 200–8°, m. 85–6° (from petr. ether). The latter (2 g.), 1.8 g. $3,4\text{-}(MeO)_2C_6H_3CH_2CH_2NH_2$, and few drops of pyridine heated in N 4 hr. at 75 mm. and 250–5° yielded 83% *N-[3,4-dimethoxyphenethyl]-3-piperidinepropionamide*, m. 91–[illegible] (from petr. ether). This heated 2 hrs. with $POCl_3$ as above in MePH on a steam bath gave 54.5% *1-[2-(3,4-dimethoxyphenethyl-3-piperidyl)ethyl]-6,7-dimethoxy-3,4-dihydroisoquinoline*, an oil; *picrate*, m. 97–8°, decomp. 160°; *di-HCl salt*, m. 117–20°. This (1.5 g. as HCl salt) heated with 10 g. Zn dust in 10 ml. H_2O and 8 ml. H_2SO_4 1.5 hrs. on steam bath gave 90% corresponding *1,2,3,4-tetrahydro analog di-HCl salt*, m. 111–13° (shrinking) and truly melting at 167–90°; *picrate*, decomp. 175°, m. 104–5°; *chloroplatinate*, solid, $C_{48}H_{68}O_4N_2.H_2PtCl_6$. G. M. Kosolapoff

ZAKHARKIN

1. LIVSHITS, R. S., BAYMOVA, M. S., KUPRYANOVA, S. D., PREOBRAZHENSKII, N. A.

2. USSR (600)

4. Isoquinoline

7. Isoquinoline compounds. Part 10. Synthesis of 1-[β(N-decyl)-3'piperidyl]-ethyl-6,7-dimethoxyl-1,2,3-tetrahydroisoquinoline. Zhur. ob. khim. 23 no. 3, 1953.

9. Monthly List of Russian Accessions, Library of Congress, June 1953. Unclassified.

PREOBRAZHENSKII, N. A.

"Isoquinoline compounds. Part 11. Synthesis of 1-[-[N- -(3 "4"-dimethoxyphenyl) -ethyl/ -3'-piperidyl]-ethyl-6,7-dimethoxy-1, 2, 3, 4,-tetrahydroisoquinoline." Livshits, R. S., Bainova, M. S., Gurevich, A. I., Preobrazhenskii, N. A. (p. 525)

SO: Journal of General Chemistry (Zhurnal Obshchei Khimii) 1953, Volume 23, No.3.

PREOBRAZHENSKIY, N. A.

USSR/Chemistry - Alkaloids Sep 53

"Synthetic Investigations in the Series of Derivatives of Indole. I. Synthesis of Urethans of 1-Methyl-5-Oxyindoline and 1,3-Dimethyl-5-Oxyindoline (Dehydrophysostigmol)," M.N. Kolosov and N.A. Preobrazhenskiy, Moscow Inst of Fine Chem Technology im M.V. Lomonosov

Zhur Obshch Khim, Vol 23, No 9, pp 1563-1569

Analogs of the alkaloid eserine (physostigmine) were synthesized: methylurethan of 1-methyl-5-oxyindoline, and methylurethan and dimethylurethan of 1,3-dimethyl-5-oxyindoline (dehydrophysostigmol).

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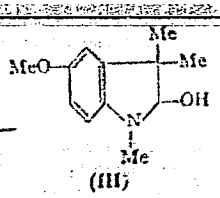
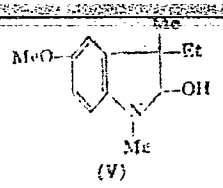
PREOBRAZHENSKIY, N. A.

The synthesis of indole derivatives. II. Synthesis of methylurethans of 1,3,3-trimethyl-5-hydroxyindoline and 1,3-dimethyl-3-ethyl-5-hydroxyindoline. M. N. Kolosov and N. A. Preobrazhenskiĭ (M. V. Lomonosov Inst. Fine Chem. Technol., Moscow). *Zhur. Obshchei Khim.*, 23, 1779–84(1953); cf. *C.A.* 48, 10723h.—To 20 g. 1,3-dimethyl-5-methoxy-2-indolinone in 60 ml. abs. EtOH and 44.5 g. MeI was added in 2.5 hrs. 4.8 g. Na in 150 ml. abs. EtOH and the mixt. stirred 2 hrs. at 50°; concn., dil. with H_2O, and extn. with Et_2O yielded 87% *1,3,3-trimethyl-5-methoxy-2-indolinone* (I), $b_{4.4}$ 152–3°, m. 58.5–9.0° (from Et_2O). This (13.5 g.) in 60 ml. abs. BuOH was treated with 60 g. Na (300 ml. BuOH added later to preserve the mobility of the mixt.) and the mixt. worked up as usual yielded 40% *1,3,3-trimethyl-5-methoxyindoline* (II), b_8 118–20° (*HCl salt*, m. 203–3.5°; *picrate*, m. 151.5–2.0°), and 33% *pseudobase* (III), b_8 155° (*picrate*, m. 155–6°). III was oxidized with eq. ale. ammoniacal $AgNO_3$ in 10 hrs. on a steam bath to I. II.HCl (1.75 g.) in 9 ml. 50% HBr refluxed 1.5 hrs. at 140–50° in a N atm. gave 93.3% *1,3,3-trimethyl-5-hydroxyindoline-HBr*, m. 212–12.5° (from abs. EtOH); the free *base*, m. 109°, sublimes at 130°/0.5 mm.; *picrate*, m. 161–2° (from EtOH); *HCl salt*, m. 238–9° (from abs. EtOH). The free base and MeNCO in the presence of a trace of Na in Et_2O gave in 3 days 90% *methylurethan*, $C_{13}H_{18}O_3N_2$ (IIIa), m. 144.5–5.0°; *picrate*, m. 156–7°; *HCl salt*, $C_{13}H_{19}O_3N_2Cl$, m. 174–5° (from EtOH); *methiodide*, decomp. 194–5°. To 54 g. *p*-$EtOC_6H_4NHEt$ in 400 ml. C_6H_6 was added with cooling 117 g. $EtCHBrCOBr$ and the mixt. stirred 0.5 hr. at room temp. and 1 hr. on a steam bath; washing with H_2O and dil. HCl and evapn. of the solvent yielded 97% *p*-$EtOC_6H_4NMeCOCHBrEt$, m. 71–2° (from dil. MeOH). This treated with 130 g. $AlCl_3$ added after the vigorous reaction subsided, 130 g. $AlCl_3$ added after the vigorous reaction subsided, and the mixt. kept 1 hr. at 180° and treated with ice yielded 92% *1-methyl-3-ethyl-5-hydroxy-2-indolinone*, m. [illegible] (from MeOH). This (80 g.) in 10 ml. 5% NaOH [illegible] g. Me_2SO_4 gave 60% *5-MeO analog*, b_3 170°, n_D^{25} 1.5[illegible], d_{25}^{25} 1.166. This (20 g.) in 50 ml. abs. EtOH treated with 43 g. MeI, then, over 3 hrs. with 4.5 g. Na in 150 ml. abs. EtOH, gave after the usual treatment 80% *5-methoxy-1,3-dimethyl-3-ethyl-2-indolinone*, b_3 142–[illegible], d_{25}^{25} 1.109. Similarly 1,3-dimethyl-5-methoxy-2-indolinone and EtI in the presence of EtONa gave 50% of the same product, $b_{4.4}$ 126–8°, n_D^{25} 1.5453. This was reduced with Na-BuOH, as above, to 48% *1,3-dimethyl-3-ethyl-5-methoxyindoline* (IV), $b_{4.4}$ 120–5° (*picrate*, m. 125–6°; *HCl salt*, m. 178–8.5°), and 24% V, $b_{4.4}$ 145–50° (pure, $b_{4.4}$ 145–6°; *picrate*, decomp. 135–8.5°). Heating IV.HCl with 50% HBr as above in a N atm. 1.5 hrs. at 140–50° gave *1,3-dimethyl-3-ethyl-5-hydroxyindoline-HBr*, m. 164–5°; free *base*, oil, b. about 140° (bath temp.)/0.3–0.4 mm. (b.p. not given); *picrate*, m. 160–60.5°; *HCl salt*, m. 174.5–5.5°; *methylurethan* (prepd. as described above for IIIa), m. 99–100° (from Et_2O) (*picrate*, m. 147–8° (from EtOH)).



(III)



(V)

G. M. Kosolapoff

PREOBRAZHENSKIY, N. A.

4

1/2

Synthetic studies in the series of indole derivatives. II. Synthesis of urethans of 1,3-dimethyl-3-(β-dimethylaminoethyl)-5-hydroxyindolin-2-one(dihydroeserolinemethine) and 1,3-dimethyl-3-(γ-dimethylaminopropyl)-5-hydroxyindolin-2-one (dihydrohomoeserolinemethine). M. N. Kolosov and N. A. Preobrazhenskii (M. V. Lomonosov Inst. Fine Chem. Technol., Moscow). *Zhur. Obshchei Khim.* 23, 1922–7(1953); cf. *C.A.* 49, 205g.—Two analogs of eserine are reported. To 45 g. 1,3-dimethyl-5-methoxyindolin-2-one (I) in 200 ml. abs. EtOH and 50 g. $ClCH_2CN$ was added at 60° over 4 hrs. 15.8 g. Na in 500 ml. abs. EtOH; after 1 hr. stirring the solvent was removed *in vacuo* and the residue treated with H_2O and Et_2O. The org. layer gave 81% *1,3-dimethyl-3-cyanomethyl-5-methoxyindolin-2-one*, m. 74.5–5.0° (from Et_2O), b_1 203–5°. Hydrogenation of this at 120 atm. H in abs. MeOH, satd. with NH_3 at 0°, 4 hrs. at 105–10° over Raney Ni gave 88% *1,3-dimethyl-3-(β-aminoethyl)-5-methoxyindolin-2-one*, b_4 201–3° (cf. King and Robinson, *C.A.* 26, 4056); *picrate*, m. 161–2°; *HI salt*, m. 189–90° (from EtOH). This (17 g.) in 18 ml. 40% HCO_2H was treated with 16 ml. 40% formalin and heated 9 hrs. at 110–15°, yielding after addn. of KOH and extn. with Et_2O 70% *1,3-dimethyl-3-(β-dimethylaminoethyl)-5-methoxyindolin-2-one*, b_4 210–15°; the same product, b_4 140–3°, formed in 83% yield when 20 g. I and 1 ml. abs. EtOH were added to suspension of 2.5 g. Na in MePh, refluxed 1 hr., then treated with $Me_2NCH_2CH_2Cl$ (17 g.) and refluxed 1 hr.; *HCl salt*, m. 193–9.5° (from EtOH); *methiodide*, m. 156–6.5° (from abs. EtOH); *picrate*, m. 171–1.5° (from EtOH); the methiodide heated with excess picric acid gave yellow *picromethylate*, m. 194–5° (cf. K. and R., *C.A.* 26, 1930). The HCl salt (5 g.) heated with 25 ml. 50% HBr 2 hrs. at 135–40°, concd. *in vacuo*, treated with MeOH and Et_2O gave 94% *1,3-dimethyl-3-(β-dimethylaminoethyl)-5-hydroxyindolin-2-one-HBr*, m. 186–6.5° (from abs. EtOH); with alc. KOH and Et_2O treatment this gave the free *base*, m. 170–70.5°; *picrate*, m. 177–8°; *HCl salt*, m. 240–40.5°. The HBr salt (3 g.) in 10 ml. warm abs. MeOH was treated with 1 g. MeONa in MeOH, the solvent was removed *in vacuo* and the residue suspended in C_6H_6 was treated with 1.5 g. Me_2NCOCl, kept 2 days at room temp., then 2 hrs. at reflux, yielding after filtration, evapn., soln. in Et_2O, and treatment with EtOH-HCl 82% *dimethylcarbamic acid ester of 1,3-dimethyl-3-(β-dimethylaminoethyl)-5-hydroxyindolin-2-*

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one-HCl, m. 211–12°; *picrate*, m. 193.5–4°; the HCl salt treated with calcd. amt. of MeONa, followed by MeI gave the *methiodide*, m. 201–2° (from abs. EtOH). Both the methiodide and the HCl salt showed miotic threshold level at 1:5000 concn. in tests with rabbits. I (72 g.) and 3.6 g. 40% $Me_3(PhCH_2)NOH$ in 215 ml. dry dioxane was treated with 20.4 g. CH_2:CHCN at 15°, then stirred 4 hrs. at room temp., yielding after evapn. 88% *1,3-dimethyl-3-(β-cyanoethyl)-5-methoxyindolin-2-one*, m. 89–90°, b_1 178–80°. This hydrogenated over Raney Ni in the presence of EtOH-NH_3 as described above gave 96% *1,3-dimethyl-3-(γ-aminopropyl)-5-methoxyindolin-2-one*, b_1 167–70°; *picrate*, m. 162–3°; *HI salt*, m. 185.5–6.0°. The base heated with 40% formalin and 90% HCO_2H at 115–20° gave 82% *1,3-dimethyl-3-(γ-dimethylaminopropyl)-5-methoxyindolin-2-one*, b_1 162–4°; *picrate*, m. 139–40°; *HI salt*, m. 181–1.5°. This heated with 50% HBr 2 hrs. at 140–5° gave 52% *1,3-dimethyl-3-(γ-dimethylaminopropyl)-5-hydroxyindolin-2-one*, m. 147–8°; *picrate*, m. 184.5–5.0°; *HI salt*, m. 160–2°. The base treated with MeONa, followed by Me_2NCOCl as described above gave 78% *dimethylcarbamate* of *1,3-dimethyl-3-(γ-dimethylaminopropyl)-5-hydroxyindolin-2-one-HCl*, m. 103–5°; *picrate*, m. 134–5°. The HCl salt had miotic threshold at 1:500 dilu.

G. M. Kosolapoff

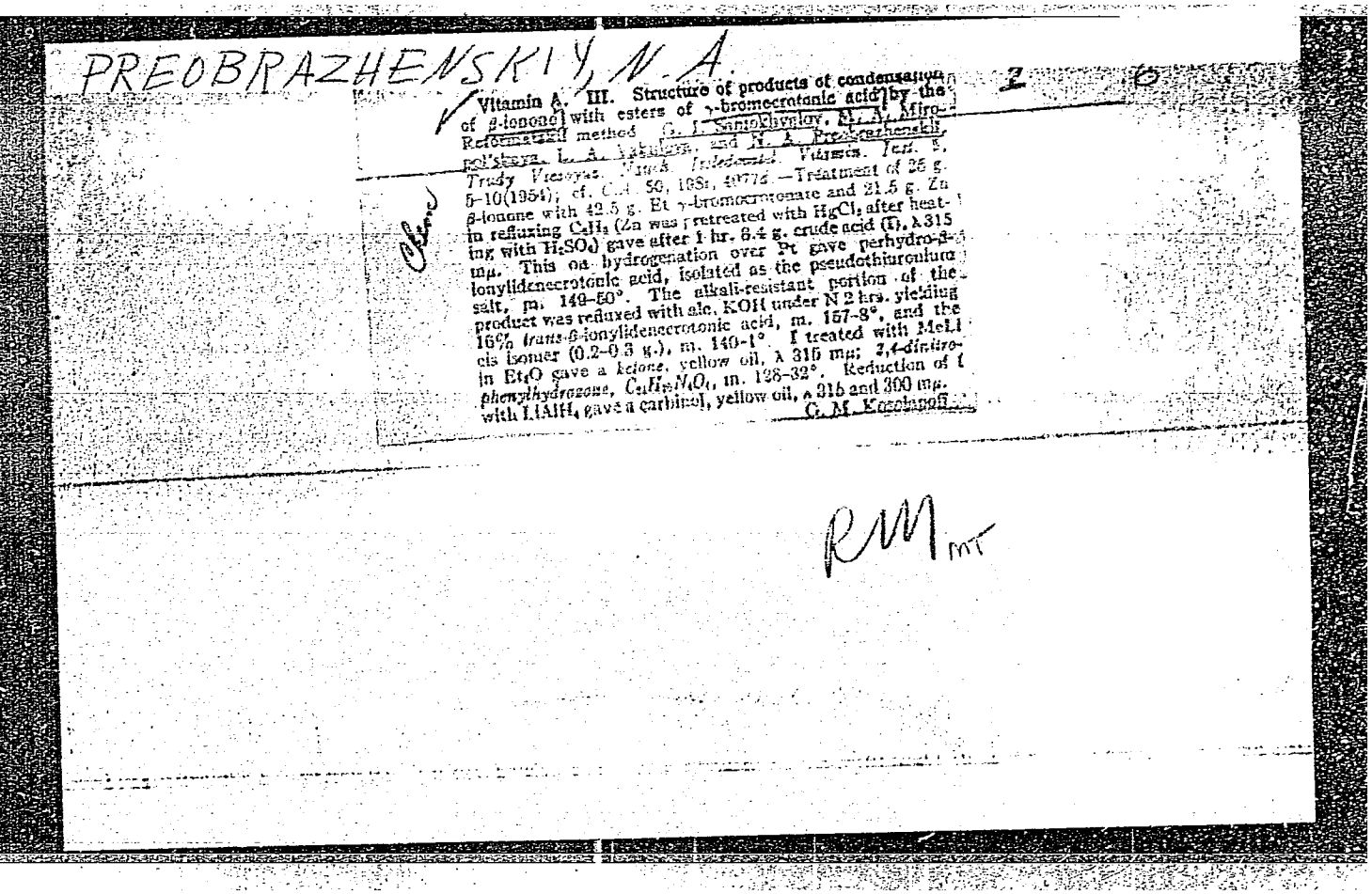
PREOBRAZHENSKIY, N.A.

USSR

Synthetic studies in the indole series of derivatives. IV. Synthesis of esermetol, homoeserметol, and homoeseroline.

M. N. Kolosov, L. I. Metreveli, and N. A. Preobrazhenskii
M. V. Lomonosov Inst. Fine Chem. Technol., Moscow.

Zhur. Obshchei Khim. 23, 2027-34(1953); cf. *C.A.* 49, 1005c.—It was shown that *di*-esermetol is different in its properties from the substance previously described (King, *et al.*, *C.A.* 26, 4056; 29, 168⁸). Mixing 11.5 g. 1,3-dimethyl-3-(2-aminoethyl)-5-methoxyindolin-2-one with 5.3 g. BzH gave spontaneous reaction; after 2 hrs. the mixt. was heated 15 min. on a steam bath and concd. *in vacuo*; the residue was heated with 9 g. MeI 1 hr., the process being repeated with 2 g. MeI, and the resulting mixt. concd. *in vacuo*, and the residual glassy methiodide treated with 50 ml. 90% EtOH and the alc. slowly distd. The remaining soln. was dild. with Et_2O, yielding 85% *1,3-dimethyl-3-(2-methylaminoethyl)-5-methoxyindolin-2-one-HI*, m. 189–92°, pure product, m. 193° (from EtOH); *picrate*, m. 178–9° (from EtOH). The HI salt (17 g.) in 600 ml. hot abs. BuOH was treated with 70 g. Na over 10–15 min. and the usual treatment gave 81% *esermetol* (I), b_6 165–70° (pure, b_6 166.5°); *HCl salt*, m. 190–1°; *HI salt*, m. 167°; *picrate*, m. 150°. The base with MeI gives an *oily methiodide* which heated with alc. picric acid yields orange *picromethylate*, m. 175–7°; I is unchanged (tested as picrate) on heating with *p*-$MeC_6H_4SO_2Cl$ in pyridine, or with MeOCOCl in aq. KOH-$CHCl_3$. To 2 g. I in Et_2O was added 2.5 g. MeI, and after 1 hr. few drops H_2O, the crg. layer was separated, and the residue taken up in 100 ml. 50% MeOH, heated 15 min. on a steam bath with fresh AgCl, filtered, evapd. *in vacuo*, the residue taken up in 10 ml. EtOH and treated with 5 g. $K_3Fe(CN)_6$ and 7 g. KOH in 60 ml. H_2O, heated 3 min. on a water bath, extd. with Et_2O, and the ext. concd. yielding after addn. of picric acid 1.3 g. *dehydroesemetolmethine picrate*, identical with *1,3-dimethyl-3-(2-dimethylaminoethyl)-5-methoxyindolin-2-one picrate*, m. 170–1°. This shaken with concd. HCl, extd. with Et_2O and treated with NaOH gave a base, which with HCl gave *1,3-dimethyl-3-(2-dimethylaminoethyl)-5-methoxyindolin-2-one-HCl*, m. 198–9°. Treatment of 39 g. 1,3-dimethyl-3-(γ-aminopropyl)-5-methoxyindolin-2-one with 17 g. BzH in C_6H_6 gave after 1 hr. on a steam bath 96% *1,3-dimethyl-3-(γ-benzalaminopropyl)-5-methoxyindolin-2-one*, m. 113.5–4.0° (from MeOH). This with 39 g. MeI heated 3 hrs. on a steam bath gave 88% *1,3-dimethyl-3-(γ-methylaminopropyl)-5-methoxyindolin-2-one* HI, m. 156–6.5° (from EtOH); *free base*, b_4 198–200°; *picrate*, m. 180–80.5° (from EtOH). This (10 g. or 14.0 g. HI salt) reduced as above with Na in BuOH to 70% *homoesermetol* (*1,9,11-trimethyl-6-methoxypiperido(2,3-b)indoline*), m. 68–9°, b_4 161–2°; *HI salt*, m. 145–7°; *HBr salt*, m. 160.5–80.0°; *picrate*, m. 146–7° (from EtOH). II (37.7 g.



PREOBRAZHENSKIY, N. A.

Vitamin A. III. Structure of products of condensation of β-ionone with esters of γ-bromocrotonic acid by the Reformatskiĭ method. G. I. Samokhvalov, N. A. Mirolyubova, L. A. Yakubova, and N. A. Preobrazhenskiĭ. Trudy Vsesoyuz. Nauch. Issledovat. Vitamin. Inst. 5, 5–10(1954); cf. C.A. 50, 1081, 4077d.—Treatment of 25 g. β-ionone with 42.5 g. Et γ-bromocrotonate and 21.5 g. Zn in refluxing C_6H_6 (Zn was pretreated with $HgCl_2$ after heating with H_2SO_4) gave after 1 hr. 8.4 g. crude acid (I), λ 315 mμ. This on hydrogenation over Pt gave perhydro-β-ionylidenecrotonic acid, isolated as the pseudothiuronium salt, m. 149–50°. The alkali-resistant portion of the product was refluxed with alc. KOH under N 2 hrs. yielding 16% *trans*-β-ionylidenecrotonic acid, m. 157–8°, and the *cis* isomer (0.2–0.3 g.), m. 140–1°. I treated with MeLi in Et_2O gave a *ketone*, yellow oil, λ 315 mμ; *2,4-dinitrophenylhydrazone*, $C_{24}H_{28}N_4O_4$, m. 128–32°. Reduction of I with $LiAlH_4$ gave a carbinol, yellow oil, λ 315 and 300 mμ.

C. M. Kocheshkov

PREOBRAZHENSKIY, N.A.

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Synthesis of thiamine chloride hydrochloride (vitamin B_1). I. A. Robtsov, N. A. Preobrazhenskii, E. S. Zhdanovich, and N. A. Preobrazhenskii. *Trudy Vsesoyuz. Nauch. Issledovatel. Vitamin. Inst.* 5, 10–12(1954); cf. *C.A.* 50, 4158e.—2-Methyl-4-amino-5-chloromethylpyrimidine was formed in 90–3% yield; m. 212–13°, by treatment of the corresponding hydroxy- or alkoxymethylpyrimidine with HCl. Condensation of 4-methyl-5-(2-hydroxyethyl)thiazole with 2-methyl-4-amino-5-[chloro(or bromo)methyl]pyrimidine was examd. in various solvents. The best results were obtained with the 5-bromomethyl deriv. which gave 55.4% thiamine bromide hydrobromide when the condensation was run 0.5 hr. in refluxing $CHBr_3$ or $EtOCH_2CH_2CN$; in Iso-BuCN the yield was 51.5%, in dioxane 43.8%, and in HCO_2-$CH_2CH_2CHMe_2$, 52.3%. The chloromethyl deriv. gave 36–9% yield. It was shown that the thiazole component was partly consumed in the binding of the resulting HBr from the reaction.

G. M. Kosolapoff

RUDTSOV, I.A.; BALYAKINA, M.V.; GRYZLOVA, L.G.; ZHDANOVICH, Ye.S.; PREOBRAZHENSKIY, N.A.

Oxidation of diacetone-*l*-sorbose by sodium hypochlorite into diacetone-2-keto-*l*-gulonic acid. Trudy VNIVI 5:17-21 '54. (MLRA 9:3)

1. Sinteticheskaya laboratoriya.
(GULONIC ACID) (SORBOSE)

PREOBRAZHENSKIY, N.A.

Chem

Preparation of β-alanine in synthesis of pantothenic acid. E. S. Zhdanovich, N. A. Preobrazhenskiĭ, and E. I. Nezhuta. *Trudy Vsesoyuz. Nauch. Issledovatel. Vitamin. Inst.* 5, 30-2(1954).—$H_2NCH_2CH_2CO_2H$ was obtained from its phthalimido deriv. by hydrolysis with 20–5% H_2SO_4 11–14 hrs. or with 30% H_2SO_4 5 hrs.; after cooling of the soln. and sepn. of phthalic acid, excess H_2SO_4 was neutralized with $Ca(OH)_2$ to litmus, and after sepn. of gypsum and of NH_3 (by heating) free β-alanine was obtained on evapn.

G. M. Kosolapoff

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PREOBRAZHENSKIY, N. A.
USSR/ Physics - Spectral analysis

Card 1/1 Pub. 43- 30/62

Authors : Slovokhotova, N. A.; Samokhvalov, Gl. I.; Miropol'skaya, M. A.; Vakulova, L. A.; Zhukova, L. P.; and Preobrazhenskiy, N. A.

Title : Spectroscopic investigation of the Mechanism of condensation reaction of beta-ionone with ethyl ether of gamma-bromocrotonic acid

Periodical : Izv. AN SSSR. Ser. fiz. 18/6, 692-693, Nov-Dec 1954

Abstract : The products of beta-ionone condensation with esters of gamma-bromocrotonic acid were investigated in a benzene solution under the effect of metallic zinc. It was established that the reaction is concluded by total dehydration and formation of unsaturated ester. The product of beta-ionone reaction with ethyl ether of gamma-bromocrotonic acid was subjected to rectification in vacuo and the properties of the 22 fractions obtained therefrom are described. The basic condensation product was found to be an unstable ester, a product of anionotropic regrouping and dehydration of the intermediate hydroxyester. Graph.

Institution : The L. Ya. Karpov Phys-Chem. Inst.

Submitted : .....

PREOBRAZHENSKIY, N. A.

USSR/Chemistry

Card 1/1 Pub. 22 - 23/40

Authors : Samokhvalov, G. I.; Miropol'skaya, M. A.; Vakulova, L. A.; Zhukova, L. P.; Slovookhotova, N. A.; Malyusov, V. A.; and Preobrazhenskiy, N. A.

Title : Aniontropic and prototropic regroupings during the synthesis of polyene compounds

Periodical : Dok. AN SSSR 99/2, 273-276, Nov. 11, 1954

Abstract : Data on the aniontropic and prototropic regroupings, observed during the synthesis of polyene compounds, are presented. It was found that the reaction between beta-ionone and esters of gamma-bromocrotonic acid (Reformatzky reaction) results not only in the formation of hydroxy-carboxylic acid esters but also in the migration of the hydroxyl (aniontropic regrouping) toward the end of the conjugated system and consequent dehydration. The conditions under which the migration of the hydrogen (prototropic regrouping) and elongation of the chain of conjugated double bonds take place are discussed. The two tendencies of the prototropic regrouping are explained. Nine references: 3-USA; 3-USSR; 2-French and 1-Swiss (1946-1953). Graphs.

Institution : All-Union Scientific Research Vitamin Institute

Presented by : Academician I. L. Knunyants, June 25, 1954

SAMOKHVALOV, G.I.; MIROPOL'SKAYA, M.A.; VAKULOVA, L.A.; PREOBRAZHINSKIY, N.A.

Full synthesis of pseudoionone. Zhur.ob.khim. 25 no.3:545-550 Mr '55 (MLRA 8:6)
(Pseudoionone)

PREOBRAZHENSKIY, N.A.

Synthetic studies in the area of magnoline alkaloids. I. N. Gorbacheva, E. N. Tsvetkov, L. P. Varnakova, A. I. Gavrilova, and N. A. Preobrazhenskii (Inst. Fine Chem. Technol., Moscow). *Zhur. Obshchei Khim.* 25, 1423–6 (1955).—Keeping 3 - methoxymethyl - 4' - carbomethoxymethyldiphenyl ether in 25% HBr-AcOH 3 days gave 90% *3-bromomethyl-4'-carboxymethyldiphenyl ether*, m. 107–9° (from EtOH); with CH_2N_2 this gave the *4-carbomethoxy analog*, 60%, b$_3$ 189–90°, which refluxed 2 hrs. with NaCN in MePh gave 70% *3-cyanomethyl-4'-carbomethoxymethyldiphenyl ether*, m. 45–6° (from MeOH); the *4'-carboxy analog*, m. 74–6° (from CCl_4), formed in 73% yield from the Br analog and NaCN. Sapon. with aq. alc. NaOH gave *3,4'-bis(carboxymethyl)diphenyl ether*, m. 182–4°, which treated with excess $SOCl_2$, and the resulting crude product treated with β-(3-methoxy-4-benzyloxyphenyl)ethylamine in $CHCl_3$ in the presence of 5% KOH gave 65.4% *bis[β-(3-methoxy-4-benzyloxyphenyl)ethylamide]* of *3,4' - bis(carboxymethyl)diphenyl ether*, m. 125–6° (from EtOH). This (1.15 g.) suspended in MePh and treated with 3 ml. $POCl_3$ and refluxed 1.5 hrs. gave *3,4'-bis(6-methoxy-7-benzyloxy-3,4-dihydro-1-isoquinolylmethyl)diphenyl ether*, isolated as *di-HCl salt*, m. 138–42° (from EtOH); *picrate*, m. 98–9°. Also in *J. Gen. Chem. U.S.S.R.* 25, 1369–73 (1955) (Engl. translation).

G. M. K.

SARYCHEVA, I.K.; VOROB'YEVA, G.A.; VASILENKO, A.S.; VINOKUROVA, G.G.; YELKINA, S.A.; PREOBRAZHENSKIY, N.A.

New synthesis of irones. Zhur.ob.khim. 25 no.9:1775-1781 S '55. (MLRA 9:2)

1.Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni M.V.Lomonosova.

(Irone)

PREOBRAZHENSKIY, N.A.

Synthesis of farnesol and farnesal. I. I. Sadykhov, N. G. Morozova, V. A. Abramovich, S. A. Breitburt, L. F. Sergienko, and N. A. Preobrazhenskii (Inst. Fine Chem. Technol., Moscow). *Zhur. Obshchei Khim.* 25, 2001–6 (1955); cf. Kerschbaum, *C.A.* 7, 2753; Ruzicka, *C.A.* 17, 2419.—To MeMgI from 47.42 g. Mg in Et_2O there was added at 0° 88 g. $AcCH_2CH_2CH_2OH$ in Et_2O and after 8 hrs. at room temp. the mixt. was decompd. with ice-20% AcOH, yielding 51.4% $MeC(OH)(CH_2)_2OH$, b_{16} 120–7°, d_{20} 0.9045, n_D^{20} 1.4492. This (21.2 g.) in dry C_6H_6 was treated with ice cooling with 40.6 g. PBr_3 in 40 ml. C_6H_6 and the mixt. kept 3 hrs. on a steam bath and treated with ice, yielding 56.1% *di-Br analog*, b_{16} 94–5°, d_{20} 1.5490, n_D^{20} 1.4828, which darkens in air. This (23.8 g.) and 7.8 g. pyridine heated 2 hrs. at 70–79° in partial vacuum (150 mm.), and the mixt. cooled and filtered gave on distn. 76.4% $Me_2C:CHCH_2CH_2Br$, b_{760} 96°, d_4 1.2172, n_D^{20} 1.4720. This (8 g.) in Et_2O was added to 1.2 g. Mg and the Grignard reagent was treated at 0° with 3.43 g. $AcCH:CH_2$ in Et_2O over 0.5 hr.; after 2 hrs. at room temp. the mixt. was treated with ice-20% AcOH and extd. with Et_2O, yielding 29.3% *linalool*, b_{16} 128–30°, d_4 0.8724, n_D^{20} 1.4625. This (100 g.) in 30 ml. MeOH brought to reflux and treated 2 hrs.

Syn of farnesol and farnesal.

with dry HCl yielded 87.5% *geranyl chloride*, b_{17} 105–10°, d_{20} 0.9315, n_D^{20} 1.4709. EtONa from 11.73 g. Na and 200 ml. EtOH was treated with 66.37 g. $AcCH_2CO_2Et$, followed after 1 hr. by 88.08 g. geranyl chloride, at 24–30 drops per min., after which the mixt. was refluxed until it became neutral to litmus; treatment with 150 ml. H_2O and refluxing with 42.9 g. $Ba(OH)_2$ 8 hrs. gave a ppt. of the Ba salt of geranylacetoacetic ester, which was treated with 20% HCl and extd. with Et_2O to yield 79.6% *α,β-dihydropseudoionone*, b_{10} 136–8°, d_{20} 0.8812, n_D^{20} 1.4690. This (33.80 g.) mixed with 24.4 g. $ClCH_2CO_2Et$ in C_6H_6 was added to 4.86 g. Mg in refluxing C_6H_6; after refluxing 1 hr. and cooling, the mixt. treated with 10% HCl gave *crude Et β-hydroxyhydrofarnesolate* (I), b_{11} 163–70°, which had undergone dehydration. I (6.7 g.) in C_6H_6 was treated dropwise with 2.5 g. $POCl_3$ in 16 ml. pyridine and the mixt. refluxed 45 min., cooled, and quenched in H_2O; the org. layer was washed with $NaHCO_3$ and distd., yielding 4.5 g. *Et farnesolate*, $C_{17}H_{28}O_2$, b_{10} 162–4°, d_{20} 0.9230, n_D^{20} 1.4792. This (2.6 g.) in Et_2O was added to 0.33 g. $LiAlH_4$ in Et_2O at −50° and stirred 1 hr. at −30°, yielding after treatment with H_2O 84% *farnesol*, b_4 142–3°, d_{20} 0.9016, n_D^{20} 1.4887, which treated with AcCl in pyridine-C_6H_6 with ice cooling 8 hrs. gave 70.1% *acetate*, b_4 105–7°, d_{20} 0.9247, n_D^{20} 1.4770. Shaking 1.33 g. farnesol with 100 ml. petr. ether and 10 g. activated MnO_2 4 hrs. gave 63.1% *farnesal*, b_3 105–6°, d_{20} 0.8909, n_D^{20} 1.4871; *semicarbazone*, m. 136–7°.

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PREOBRAZHENSKIY, N.A.

Synthesis of substituted diphenyl ethers. I. N. Gorbacheva, E. N. Tsvetkov, L. P. Varnakova, K. M. Losev, and N. A. Preobrazhenskii. *J. Gen. Chem. U.S.S.R.* 25, 2259-63(1955)(Engl. translation).—See *C.A.* 50, 0322d.
B. M. R.

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PREOBRAZHENSKIY, N. A.

Synthesis of substituted diphenyl ethers. I. N. Gorbacheva, E. N. Tsvetkov, L. P. Varnakova, K. M. Losev, and N. A. Preobrazhenskii (Lomonosov Fine Chem. Technol. Inst., Moscow). *Zhur. Obshchei Khim.* 25, 2290–4 (1955).—Slow addn. of 30 ml. Me_2SO_4 and (0) ml. 10 *N* NaOH to 50 g. *m*-$O_2NC_6H_4CH_2OH$ at 40° gave 80% *m*-$O_2NC_6H_4CH_2OMe$, b_4 128–30°, and a residue of (*p*-$O_2NC_6H_4CH_2)_2O$, m. 100–2°. Reduction with Zn-HCl in MeOH gave *m*-$H_2NC_6H_4CH_2OMe$, 80%, b_{1-2} 115–18°, d_{20} 1.067, n_D^{20} 1.5635; the same forms on hydrogenation of the nitro deriv. over Ni at 65 atm. at room temp. Diazotization in 30% H_2SO_4 with $NaNO_2$ and heating with much 30% H_2SO_4 gave 60% *m*-$HOC_6H_4CH_2OMe$, b_4 119–20°, d_{20} 1.108, n_D^{20} 1.5400. Addn. of 13 g. 4,3-$Br(O_2N)C_6H_3CH_2CO_2H$ (Ia) to 130 ml. fuming HNO_3, then heating 1 hr. on a steam bath gave 65% *5-*O_2N *deriv.* (I), m. 162–3°, the same being formed on nitration of *p*-$BrC_6H_4CH_2CO_2H$. Refluxing Ia with EtOH in C_6H_6 in the presence of H_2SO_4 gave 75% *Et ester*, b_{1-2} 156–9°, m. 33–5°. Passage of HCl into I in EtOH at reflux gave 100% its *Et ester*, m. 75–6°. Heating 0.28 g. KOH, 1.8 ml. H_2O, 1.15 g. 4,3-$Br(O_2N)C_6H_3CHO$ (semicarbazone, m. 221–2°) and 0.62 g. *p*-$MeOC_6H_4OH$ 3 hrs. at 118–20° gave 53% *3,4-*O_2N*(4-MeOC*$_6H_4O$*)*C_6H_3CHO, m. 62–3°; *semicarbazone*, m. 201–2°. *m*-$HOC_6H_4CH_2OMe$ (II) treated with Na in C_6H_6, followed by 4,3-$Br(O_2N)C_6H_3$-CO_2Me and heating 12 hrs. at reflux gave 77.3% *4,1,3-*(*3-MeOCH*$_2C_6H_4O$*)*$C_6H_3(NO_2)_2$, undistillable yellow oil. II (21 g.) added to 8.5 g. KOH in 25 ml. MeOH, freed of MeOH and treated with 1 g. fresh powd. Cu and *p*-$BrC_6H_4CH_2$-CO_2Me at 140–5° 3.5 hrs. gave 35% *4-*(*3-MeOCH*$_2C_6H_4O$*)*-$C_6H_4CO_2Me$, b_{1-2} 180–2°, d_{20} 1.1471, n_D^{20} 1.5539; the *carbethoxy analog*, b_{1-2} 184–6°, d_{20} 1.1307, n_D^{20} 1.5465. Similarly was prepd. 92% *3,4-*O_2N*(3-MeOCH*$_2C_6H_4O$*)*$C_6H_3CO_2Me$, undistillable yellow oil. II Na salt and I gave 90% *3,5,4-*$(O_2N)_2$*(3-MeOCH*$_2C_6H_4O$*)*$C_6H_3CO_2Me$, m. 97–8°.

G. M. Kosolapoff

PREOBRAZHENSKIY, N. A.

USSR/ Chemistry - Alkaloids

Card 1/1 Pub. 22 - 22/47

Authors : Gusakova, G. S., and Preobrazhenskiy, N. A.

Title : Synthetic investigations of yohimbine alkaloids

Periodical : Dok. AN SSSR 101/6, 1061 - 1063, Apr. 21, 1955

Abstract : The synthesis of yohimbine from the bark of yohimbe tree and the decomposition of racemates is briefly described. The introduction of the hydroxyl group into the yohimbine nucleus, in a position it usually occupies in the very alkaloid, is explained. The synthesis of apohimbine from yohimbon is analyzed. Four references: 2 USA; 1 Swiss and 1 USSR (1950-1953). Graphs.

Institution : The M. V. Lomonosov Inst. of Prec. Chem. Techn., Moscow

Presented by: Academician I. N. Nazarov, November 25, 1954

PREOBRAZHENSKIY, N.A

USSR/ Chemistry - Inorganic chemistry

Card 1/1 Pub. 22 - 27/62

Authors : Volkova, L. V.; Tolkachev, O. N.; and Preobrazhenskiy, N. A.

Title : Synthesis of bisbenzyltetrahydroisoquinoline esters

Periodical : Dok. AN SSSR 102/3, 521 - 524, May 21, 1955

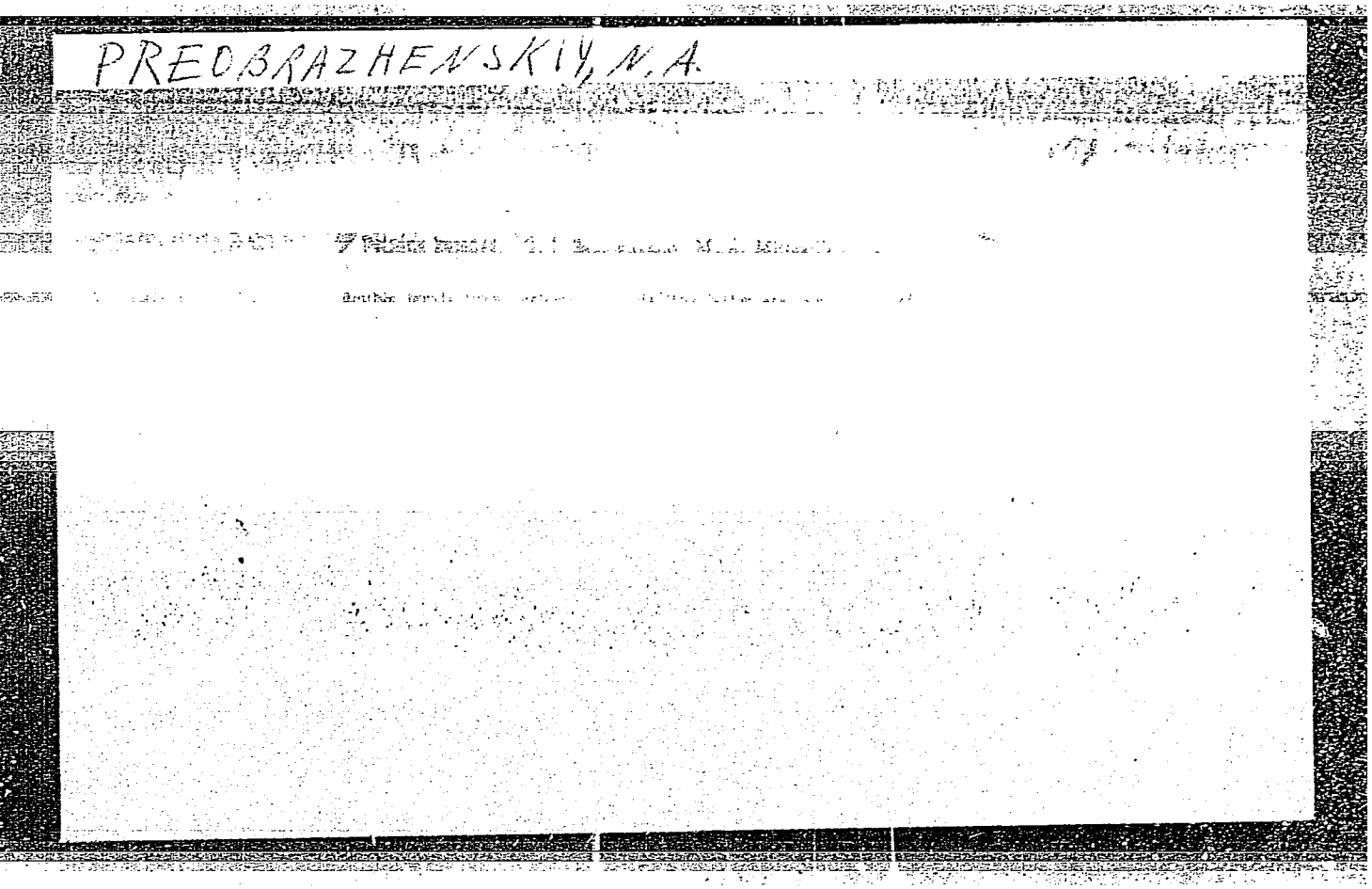
Abstract : The synthesis of bisbenzyltetrahydroisoquinoline esters (medicinal compounds) from Beta-[3-methoxy-4-oxy-5-(4-carboethoxyphenoxy)phenyl] ethylamine, melting point 77-83°, and from beta-[3-methoxy-4(2'-methoxy-5'-carbomethoxymethylphenoxy)phenyl] ethylamide of formic acid, melting point 132-138° is described.

Institution : The M. V. Lomonosov Inst. of Prec. Chem. Technol., Moscow

Presented by: Academician I. L. Knunyants, January 7, 1955

BEER, Aleksey Aleskeyevich; RUBTSOV, Ivan Andrianovich; NAZAROV, I.N., akademik, retsenzent; PREOBRAZHENSKIY, N.A., professor, retsenzent; BUKIN, V.N., professor, spetsredaktor; PRITYKINA, L.A., redaktor; GOTLIB, E.M., tekhnicheskiy redaktor

[Synthesis of vitamins] Sintez vitaminov. Moskva, Pishchepromizdat, 1956. 258 p. (MIRA 10:1)
(VITAMINS)



PREOBRAZHENSKIY, N.A.

USSR /Chemical Technology. Chemical Products and Their Application

I-21

Medicinals. Vitamins. Antibiotics

Abs Jour: Referat Zhur - Khimiya, No 9, 1957, 32269

Author : Preobrazhenskiy N. A.

Title : Current Problems of the Chemistry of Organic Medicinals

Orig Pub: Khim. nauka i prom-st', 1956, 1, No 4, 362-376

Abstract: The present state of the chemistry of organic medicanals is described and the course of its future development is outlined.

Card 1/1

PREOBRAZHENSKIY, N.A.

Synthesis of nerol and geraniol. G. I. Samukhvalov, M. A. Miropol'skaya, and N. A. Preobrazhenskii. *Zhur. Obshchei Khim.* 26, 51–6(1956); *J. Gen. Chem. U.S.S.R.* 26, 53–6(1956)(Engl. translation); cf. *C.A.* 47, 3277e.—6-Methyl-5-hepten-2-one (12.7 g.) and 17.6 g. $BrCH_2CO_2Me$ in 80 ml. C_6H_6 was gradually added to 9 g. activated Zn under dry C_6H_6 at reflux; after further heating 20–30 min., the cooled mixt. was treated with 10% AcOH and the org. layer, after washing, yielded 75–8% $Me_2C:CHCH_2CH_2CMe(OH)CH_2CO_2Me$ (I), b_4 103–10°, d_{20} 0.9744, n_D^{20} 1.4568, which refluxed 6 hrs. with excess Ac_2O gave 80–8% corresponding *acetate*, b_3 118–20°, d_{20} 0.9938, n_D^{20} 1.4503. This heated with KOAc maintaining vapor temp. below 185° gave a distillate of AcOH and a residue of 70–2% $Me_2C:CHCH_2CH_2CMe:CHCO_2Me$, b_3 93–5°; this (8.5 g.) reduced with 2.3 g. $LiAlH_4$ in Et_2O at −60°, finally at −30°, gave 87.5–90% mixt. (II) of *nerol and geraniol*, b_4 104–5°, d_{20} 0.8862, n_D^{20} 1.4741. To 48 g. $KMnO_4$ in 300 ml. H_2O at 60–70° was added simultaneously from 2 funnels 34 g. KOH in 50 ml. H_2O and 45.5 g. $MnSO_4$ in 40 ml. H_2O; after gradual cooling 2 hrs., the resulting active MnO_2 was washed with H_2O and dried *in vacuo*. This (20 g.) shaken 3 hrs. with 2 ml. II in 100 ml. petr. ether gave 89–91% *citral*, b_3 96–7°, n_D^{20} 1.4842; *semicarbazone*, m. 130–5°. The latter deposited on Al_2O_3 from $CHCl_3$ and eluted with $CHCl_3$, the zone movement being followed by ultraviolet fluorescence, gave first an eluate of *nerol* (*semicarbazone*, m. 169–70°), then a low yield of *geranial* (*semicarbazone*, m. 161–2°). I (13 g.) in 30 ml. C_6H_6 added to refluxing soln. of 6.5 g. $POCl_3$, 30 ml. C_6H_6, and 30 ml. pyridine and boiled 40–5 min., cooled, treated

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Samokhvalov, G.I., Miropol'skaya, M.A., and Preobrazhenskii, N.A.

with ice, and the org. layer washed with dil. H_2SO_4 and $NaHCO_3$, gave 58% *Me geranate*, b_3 90–2°, which with $LiAlH_4$ gave 89% alc. $C_9H_{17}O$, b_3 97–8°, which oxidized as above with MnO_2 gave 81% *citral*, b_4 92–3°. C. M. K.

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PREOBRAZHENSKIY, N.A.

Polyene compounds. X. Direction and stereochemical specificity of dehydration of esters of 3,7-dimethyl-6-octen- [illegible] and 5,6-dimethyl-2,4-heptadien-5-ol-1-oic [illegible]

Preobrazhenskii. Zhur. Obshchei Khim. 26, 2793-7 (1956); C. Chr. 50, 9820a, 13715f.—Dehydration of esters of the above cited acids yielded compds. with 2,3- and 3,4-double bonds and cis- and trans-substituents at this double bond. Pyrolysis of Ac derivs. of the acids, however, yielded predominantly the 2,3-unsatd. derivs. with trans structure; P halides yield mainly the cis isomers with 2,3- and 3,4-double bonds. PBr_3 (12.7 g.) and 1.7 ml. pyridine treated at 50-60° with 16.2 g. Et 3,7-dimethyl-6-octen-1-ol-1-oate, followed by 6 ml. pyridine, and the mixt. stirred 0.5 hr. at 50-60°, cooled to 0°, dild. with H_2O, and extd. with Et_2O gave 73.5% mixed *Me 3,7-dimethyl-2,6-* and *3,6-octadien-1-oates*, b_3 110-12°, n_D^{17} 1.4663, d_4 0.9248; the mixt. (9.1 g.) reduced with 2.2 g. $LiAlH_4$ at −90° in Et_2O gave 89% [illegible] b_4 96-100°. This mixt. (3.7 g.) shaken with 20 g. I_2 in petr. ether 3 hrs. gave 78% crude citral, b_3 84-6°, contg. 6.2% active II and 40% unoxidizable 3,7-dimethyl-3,6-octadien-1-ol (I); the oxidation product with $H_2NCONHNH_2$ yielded 55% crude citral semicarbazone, m. 130-5°, confirming the above

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ol-1-oate with PBr_3-pyridine as above gave 77% *Et 5,9-dimethyl-2,4,8-decatrien-1-oate*, b_5 109–11°, λ 275 mμ, yielding with 10% alc. KOH the *free acid*, a yellow oil, which with MeLi in Et_2O gave 86% *pseudoionone*, $b_{0.4}$ 95–6° (2,4-dinitrophenylhydrazone, m. 132–6°). The crude product in $CHCl_3$ adsorbed on Al_2O_3, washed down with $CHCl_3$, and the lower highly-colored band eluted with $CHCl_3$ yielded (from 200 ml. original hydrazone) 175 mg. pure *pseudoionone 2,4-dinitrophenylhydrazone*, m. 148–9°, corresponding to the *geranial deriv.*, while the lower less-colored band, eluted with $CHCl_3$-EtOH, gave 21 mg. *2,4-dinitrophenylhydrazone of pseudoionone*, m. 118–19°, corresponding to the *neral deriv.* Natural citral yielded a 2,4-dinitrophenylhydrazone, which, treated as above on Al_2O_3, gave (from 200 mg.) 185 mg. isomer, m. 148–9°, and 12 mg. isomer, m. 118–19°, identical with the above samples.

G. M. Kosolapoff

PREOBRAZHENSKIY, N.A.

Polyene compounds. XI. Structure of 3-methyl-4-(2,6,6-trimethylcyclohexen-1-yl)-2-buten-1-al. [in Russian] G. I. Kusnetsov, L. P. Zhukova, and N. A. Preobrazhenskii (All-Union Vitamin Sci. Research Inst., Moscow). Zhur. Obshchei Khim. 25, 3105-10 (1955); cf. C. A. 50, 13820f, 51, 7330g.—Over 1.5 hrs. 72.5 g. MeONa was added to a stirred mixt. of 192 g. β-ionone and 124.5 g. ClCH$_2$CO$_2$Et at −10°, after stirring 4 hrs. the mixt. treated with 85 g. NaOH in 675 ml. 80% MeOH, warmed to 2-5° and stirred 2 hrs., after which 200 ml. H$_2$O was added, the mixt. warmed to 20°, and extd. with Et$_2$O yielding from the ext. 76.7% crude aldehyde, b$_{4.5}$ 93-104°; this (139 ml.) fractionated in a rotor-packing column gave 66% pure *3-methyl-4-(2,6,6-trimethylcyclohexen-1-yl)-2-buten-1-al* (*semicarbazone*, m. 165-6°), which refluxed in petr. ether with 15% H$_2$SO$_4$ in inert atm. gave 77.5% original aldehyde in purified state, b$_{4.5}$ 93-8°, n_D^{25} 1.5114, $E_{328\ m\mu,\ 1\ cm.}^{1\%}$ 950. Treatment of 4.5 g. cryst. 1,6-dihydroxy-3,7-dimethyl-9-(2,6,6-trimethylcyclohexen-1-yl)-2,4,7-nonatriene with 14 ml. CH$_2$Cl$_2$ and 3.8 ml. pyridine, followed at −5° under N with 1.43 g. AcCl in CH$_2$Cl$_2$ gave after standing overnight 91.5% *1-acetoxy-3,7-dimethyl-6-hydroxy-9-(2,6,6-trimethylcyclohexen-1-yl)-2,4,7-nonatriene*, oil, n_D^{25} 1.5060, $E_{332\ m\mu,\ 1\ cm.}^{1\%}$ 268. This (4.5 g.) in 90 ml. EtOH treated with 33.5 ml. 5% H$_2$SO$_4$ and kept under N 3 hrs. gave after dilu. with H$_2$O and extn. with petr. ether 89% red oily *1-acetoxy-3,7-dimethyl-6-hydroxy-9-(2,6,6-trimethylcyclohexen-1-yl)-2,4,6-nonatriene*, n_D^{25} 1.5263, $E_{278\ m\mu,\ 1\ cm.}^{1\%}$ 870, as a result of allylic rearrangement. Infrared spectra of the aldehyde and of the acetoxy compd. (also ultraviolet) are shown. The allylic shif. described above is confirmed by appearance of intense absorption at 275-80 mμ, during the reaction.

G. M. Kosolapoff

SAMOKHVALOV, G1.I.; MIROPOL'SKAYA, M.A.; PREOBRAZHENSKIY, N.A.

New method of synthesizing polyene cetones with conjugate double bonds. Dokl. AN SSSR 107 no.1:103-104 Mr '56. (MLRA 9:7)

1.Predstavleno akademikom I.L.Knunyantsem.
(Ketones)

PREOBRAZHENSKIY, N. A.

Synthesis of polycyclic ketones with conjugated double bonds. G. I. Samokhvalov, M. A. Miropol'skaya, and N. A. Preobrazhenskii. *Proc. Acad. Sci. U.S.S.R., Sect. Chem.* 107, 151-2(1956)(Engl. translation).—See *C.A.* 50, 12820f. B. M. R.

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PREOBRAZHENSKIY, N.A.

GORBACHEVA, I.N.; BUSHBEK, G.V.; VARNAKOVA, L.P.; SHULOV, L.M.; PREOBRAZHENSKIY, N.A.

Synthesis of the methyl ether of the racemic alkaloid dauricine. Zhur. ob. khim. 27 no.8:2297-2301 Ag '57. (MLRA 10:9)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii.
(Alkaloids)

PREOBRAZHENSKIY, N A

SAMOKHVALOV, G.I.; MIROPOL'SKAYA, M.A.; LUK'YANOVA, L.V.; PREOBRAZHENSKIY, N.A.

Synthesis of polyene compounds. Part 13: Synthesis of polyene ketones by pyrolysis of acetoacetic esters of tertiary acetylene carbinols. Zhur. ob. khim. 27 no.9:2501-2506 S '57. (MIRA 11:3)
(Pyrolysis) (Ketones) (Esters)

PREOBRAZHENSKIY, N.A.

SARYCHEVA, I.K.; VOROB'YEVA, G.A.; PREOBRAZHENSKIY, N.A.

New method of synthesizing the esters of polyenocarbonic acids. Part 7. Zhur.ob.khim. 27 no.10:2653-2662 O '57. (MIRA 11:4)

1.Institut tonkoy khimicheskoy tekhnologii.
(Carbonic acid) (Esters) (Unsaturated compounds)

PREOBRAZHENSKIY, N.A.

SARYCHEVA, I.K.; VOROB'YEVA, G.A.; PREOBRAZHENSKIY, N.A.

Synthesis of 2,3,6-trimethylundecatrien-2,6,8- one-10 (pseudoirone). Part 2. Zhur.ob.khim. 27 no.10:2662-2667 O '57. (MIRA 11:4)

1.Institut tonkoy khimicheskoy tekhnologii.
(Pseudoirone)

PREOBRAZHENSKIY, N.A.

79-11-17/56

AUTHORS: Sarycheva, I. K., Vorobyeva, G. A., Kucheryavenko, L. G., Preobrazhenskiy, N. A.

TITLE: Synthesis of 2,3,6-Trimethyloctadiene-2,7-ols-6-3-Methyl Linalool (Sintez 2,3,6-trimetiloktadiyen-2,7-ola-6-3-metillinaloola)

PERIODICAL: Zhurnal Obshchey Khimii, 1957, Vol. 27, Nr 11, pp.2994-2999 (USSR)

ABSTRACT: In the described methods of synthesis of the irones 1-bromo-2,3-dimethylbutene-2 and 2,3-dimethylheptene-2-on-6, which are over 3--methyllinalool and 3-methylcitral converted to pseudoirones, regularly occur as intermediate products. The replacement of 2,3-dimethylheptene-2-on-6 by 2-methyl-3-methyleneheptanone-6 caused no essential changes in the schemes recommended earlier and only decided the question concerning new sources of raw material. Therefore it was of interest to work out, on the basis of the accessible compounds, a new way for the structural grouping $CH_3-C=C-CH_2$ (CH_3 CH_3)

which represents a starting-point of quite a number of intermediate products in the irone synthesis. The present paper describes the synthesis of 3-methyllinalool, starting from the methyl acetoacetic ester: This ester is converted to 3-methylpentanone-4-ol-1, this is again transformed to 2,3-dimethylpentadiol-2,5 which is con-

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79-11-17/56

Synthesis of 2,3,6-Trimethyloctadiene-2,7-ols-6-3-Methyl Linalool

verted to 2-5-dibromo-2,3-dimethylpentane and further to 5-bromo-2,3-dimethylpentene-2. By condensation with methylvinylketone in the presence of lithium the final product was converted to 3-methyllinalool with a 14,1 % yield (see scheme 1). Thus the synthesis of 3-methyllinalool was realized over quite a number of intermediate products. New methods of the synthesis of 1-bromo-2,3--dimethylbutene-2 and 2,3-dimethylheptene-2-on-6 were worked out. There are 1 figure, and 5 references, 1 of which is Slavic.

ASSOCIATION: **Moscow Institute of Fine Chemical Technology** (Moskovskiy institut tonkoy khimicheskoy tekhnologii)

SUBMITTED: October 8, 1956

AVAILABLE: Library of Congress

1. Irone synthesis 2. 2,3,6-Trimethyloctadiene-2,7-ols-6-3-Methyl linalool-Synthesis

Card 2/2

PREOBRAZHENSKIY, N.A.

79-11-53/56

AUTHORS: Preobrazhenskiy, N. A., Malkov, K. M., Maurit, M. Ye., Vorob'yev, M. A. Vlasov, A. S.

TITLE: Synthesis of the Alkaloid Arecoline and its Homologues (Sintez alkaloida arekolina i yego gomologov).

PERIODICAL: Zhurnal Obshchey Khimii, 1957, Vol. 27, Nr 11, pp. 3162-3170 (USSR)

ABSTRACT: The alkaloid of the Aroca Catechu palm recognized as N-methyl-1,2,5,6-tetrahydronicotinic acid ester (see its hydrogen bromide salt in formula VI) was hitherto synthesized in different manners. The authors carried out a synthesis of this alkaloid and its homologues of special practical importance with different substituents on nitrogen, starting from the methyl ester of acrylic acid (see series of formulae I-VI). The reaction of the methylacrylic acid ester upon alkylamines leads to the formation of β,β'-dicarbometoxydiethylalkylamines. The cyclization to N-alkyl-3-carbometoxy-4-piperidone takes place in alcoholate by heating of the diester of one of these amines. This piperidine is reduced to N-alkyl-3-carbometoxy-4-

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oxypiperidine. By dehydration with the aid of dehydrating agents the latter is converted to the methyl ester of N-alkyl- $-\Delta^3-$ tetrahydronicotinic acid which latter with hydrogen bromide forms the salt. The following homologues of arecoline were synthesized according to one and the same method: The methyl esters of N-ethyl-, N-n.-propyl-, N-n.-butyl- and N-benzyl- Δ^3- -tetrahydronicotinic acid. The physiological investigations in the pertinent Moscow institutes showed that the produced hydrobromide of arecoline completely corresponds with the same salt of the natural alkaloid. Of the arecoline homologues only the n-propyl derivative exerts a weak physiological action. There are 9 references, 5 of which are Slavic.

Synthesis of the Alkaloid Arecoline and its Homologues 79-11-53/56

ASSOCIATION:

Moscow Institute of Fine Chemical Technology.
Experimental Plant of the All-Union Chemical Pharmaceutical Scientific Research Institute
(Moskovskiy institut tonkoy khimicheskoy tekhnologii.
Opytnyy zavod vsesoyuznogo nauchno-issledovatel'skogo khimiko-farmatsevticheskogo instituta).

SUBMITTED: October 20, 1956

AVAILABLE: Library of Congress

1. Arecoline - Synthesis 2. Alkaloids - Synthesis
3. Areca Catechu Palm 4. Alkaloids - Sources

Card 3/3

PREOBRAZHENSKIY, N.A.

79-12-35/43

AUTHORS: Gorbacheva, I. N., Lerner, M. I., Zapesochnaya, G. G., Varnakova, L. P., Preobrazhenskiy, N. A.

TITLE: Investigations in the Field of the Synthesis of the Alkaloid Magnolamine (Issledovaniye v oblasti sinteza alkaloida Magnolamina)

PERIODICAL: Zhurnal Obshchey Khimii, 1957, Vol. 27, Nr 12, pp. 3353-3357 (USSR)

ABSTRACT: On the basis of the investigations conducted by the authors, the formula I was proposed for magnolamine in this paper. By a complete synthesis it was possible to establish the structure of this alkaloid definetively. In the present investigation it was succeded to produce the basic intermediate product of the synthesis of the dimethylether of magnolamine. By means of a condensation of the dichlorine anhydride of the 3,4 - dimethyloxy - 4,6 - dicarboxymethyl diphenylether (formula II) with - (3 - methoxy - 4 - benzyloxy) - phenylethylamine (formula III) the diamide was obtained (formula IV) the simultaneous closing of the two isoquinoline rings lead to the dichloric hydrate of the 3,4 - dimethoxy - 4",6' - [bi - (6 - methoxy - 7 - benzyl-

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Investigations in the Field of the Synthesis of the Alkaloid Magnolamine 79-12-35/43

oxi) - 3,4 dihydro - isoquinolyle] - dimethylphenylether (formula V). A further hydration, a methylation and a removal of the benzyl residua must lead to the dioxymethyl-ether of the magnolamine. The 3,4 - dimethoxy - 4',6 - dicarboxymethyldiphenylether (formula II) was produced by two methods. The further reaction process is represented by the formulae VI, VII, VIII, and IX. From this it appears, that a basic intermediate product of the synthesis of the dimethylether of the alkaloid magnolamine has been synthesized. There are 6 references, 2 of which are Slavic.

ASSOCIATION: Moscow Institute of Fine Chemical Technology (Moskovskiy institut tonkoy khimicheskoy tekhnologii).

SUBMITTED: August 21, 1956

AVAILABLE: Library of Congress

1. Magnolamine - Synthesis 2. Alkaloids - Synthesis

Card 2/2

PREOBRAZHENSKIY, N. A.

AUTHORS: Gorbacheva, I. N., Nikolayeva, L. A., Preobrazhenskiy, N. A. 79-12-39/43

TITLE: Methods for the Synthesis of the Alkaloid Daurizine (Puti sinteza alkaloida Dauritsina).

PERIODICAL: Zhurnal Obshchey Khimii, 1957, Vol. 27, Nr 12, pp. 3367-3370 (USSR)

ABSTRACT: The synthesis of the methylether of the racemic alkaloid daurizine was realized by a simultaneous juncture of two isoquinoline cycles, starting from the corresponding diamide, with a subsequent hydration and methylation of the secondary nitrogen atom (see formulae I and II). Another synthesis consists of the interaction of two benzyltetrahydroisochinoline derivatative (formula VII), with the formation of an ether bond of the two benzyl residua. In the present investigation, the synthesis of the chlorine hydrate of 1 - (4' - benzyloxy) - benzyl - 2 - methyl - 6,7 - dimethoxy - 1,2,3,4, - tetra-hydroisoquinoline (formula VII, R = $CH_2C_6H_5$, X = B_1) is conducted. The benzyl group of the latter is removed by a catalytic process by a hydration and by the chlorine hydrate of the 1 - (3' - bromide - 4' - methoxy) - benzyl

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Methods for the Synthesis of the Alkaloid Daurizine 79-12-39/43

- 2 - methyl - 6,7 - dimethoxy - 1,2,3,4, - tetraisoquinoline (formula VII, R = CH_3, X = Br) according to the scheme given here. The chlorine anhydride of the corresponding phenyl acetous acid (IV, R = $CH_3C_6H_5$, X = H and IV, R = CH_3, X = Br) was condensated with β- (3,4 - dimethoxy) - phenylethalamine (III). The amide obtained (V, R = $CH_2C_6H_5$, X = H and V, R = CH_3, X = Br) was closed by an action of phosphorous pentachloride with the formation of a dihydroisoquinoline derivative (VI, R = $CH_2C_6H_5$, X = H and VI, R = CH_3, X = Br) which was further subjected to a catalytic hydration and methylation with formalin in the presence of ameinic acid. (VII, R = $CH_3C_6H_5$. X = H and VII, R = CH_3, X = Br). The scheme given here has the purpose of arriving at the synthesis of the optically active isomers of the alkaloid daurizine. There is 1 references, 1 of which is Slavic.

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Methods for the Synthesis of the Alkaloid Daurizine 79-12-39/43

ASSOCIATION: **Moscow Institute of Fine Chemical Technology** (Moskovskiy institut tonkoy khimicheskoy tekhnologii).

SUBMITTED: November 26, 1956

AVAILABLE: Library of Congress

1. Daurizine - Synthesis 2. Alkaloids - Synthesis

Card 3/3

PREOBRAZHENSKIY, N A

AUTHORS: Tsvetkov, Ye. N., Gorbacheva, I. N., Preobrazhenskiy, N. A. 79-12-40/43

TITLE: Methods for the Synthesis of the Alkaloid Isochondodendrine (Puti sinteza alkaloida Izokhondodendrina). Cyclo - di - (4 - [3' - (β - aminoethyl) - phenoxy] - Phenylacetyl (Tsiklo - bis - (4 - [3' -(β - aminoetil) - fenoksi] - fenilatsetil).

PERIODICAL: Zhurnal Obshchey Khimii, 1957, Vol. 27, Nr 12, pp. 3370-3375 (USSR)

ABSTRACT: Isochondodendrine (I of the given scheme) may be counted to the macrocyclic di-benzyltetrahydroisoquinoline alkaloids, which show diversified and interesting physiological properties. A scheme for the synthesis of this alkaloid and of its dimethylether (II) is proposed. The basic initial reaction consists of the intramelocular cyclisation of the amide (VIII a), which is supposed to lead to to the formation of the macrocyclic diamide (IX a). This substance may then be transformed into the isochondodendrine (I) or into its dimethyl-ether (II). An interpretation of the structure of the macro-cyclic system by means of the intramolecular cyclization appears to be more appropriate to the authors compared with the

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Methods for the Synthesis of the Alkaloid Isochondodendrine . Cyclo - di - (4 - [3' - (β-aminoethyl - phenoxy] - phenylacetyl

79-12-40/43

bimolecular condensations, which were proposed earlier for the synthesis of such compounds. The method proposed here is proved experimentally by the synthesis of the cyclo di - (4(3' - (β-aminoethyl)-phenoxy) - phenylacetyl (IX) (see the complete scheme). On the basis of the cyclization of the diamide (IX) according to Bishler, and of the subsequent hydration two compounds were isolated, which probably possess the formula (X). The existence of two varieties is explained by the two unsymmetric hydrocarbons.
There are 6 references, 2 of which are Slavic.

SUBMITTED: November 1, 1956

AVAILABLE: Library of Congress

1. Isochondodendrine - Synthesis 2. Alkaloids - Synthesis

Card 2/2

AUTHORS: Aksanova, L. A. and Preobrazhenskiy, N. A. 20-1-21/42

TITLE: Note on the Synthetic Production of Yohimbine, (Sintez alkaloida iokhimbina).

PERIODICAL: Doklady AN SSSR, 1957, Vol. 117, Nr 1, pp. 81-83 (USSR)

ABSTRACT: In a previous note of the second author (reference 1) the production of apo-yohimbine from yohimbone and formic ether was described. Thereby one of the main problems of the synthetic production of the active substance of the bark of Corynanthe yohimbe, the reproduction of the hydrated E- ring, was solved. This ring corresponds to native yohimbine (structure formula V). The synthesis of apo-yohimbine, which was realized by the authors, however, does not make possible the production of yohimbine as yet, for the synthesis of 16 α-carbomethoxy - 17 - α oxy-yohimbane (V) from 16 α - carbomethoxy-yohimbane - 16 is very difficult. In the present paper the authors established, that yohimbine (I) reacts with di-ethyl-carbonate, forming carbo-ethoxy-yohimbine (II). By means of reducing the ether produced in that way in III, by a subsequent saponification in IV and by etherification the

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methyl-ether of the yohimbol carbonate acid, that means, the alkaloid yohimbine, was obtained. The best results were obtained at the condensation of yohimbine with a substantial excess of di-ethyl-carbonate and shaking during 3 - 4 days at 18 - 20°C. In an experimental section of the paper not set apart however, from the other contents, production rates and reactions of all substances mentioned with other reagents are given. The ethylether produced from yohimbine carbonate acid (III) was reduced to yohimbine-alcohol (VI) with the help of lithium aluminiumhydrate in a milieu of dry tetra-hydro-furane. The same product results from a reduction of yohimbine. This synthetic alcohol yields by means of an interaction with benzoic aldehyde in the presence of p toluene-sulphonic acid the p-toluene sulfonate of the benzylidene derivate VII. Consequently, the present paper represents the completion of a complete synthesis of the alkaloid yohimbine, which up to now could only be conducted to the stage of yohimbine (reference 2) and of apo-yohimbine. There are 3 references, 1 of which is Slavic.

Note on the Synthetic Production of Yohimbine, 20-1-21/42

ASSOCIATION: Moscow Institute for Fine Chemical Technology imeni M. V. Lomonosov, Moscow (Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M. V. Lomonosova).

PRESENTED: June 17, 1957, by I. N. Nazarov, Academician

SUBMITTED: May 16, 1957

AVAILABLE: Library of Congress

Card 3/3

PREOBRAZHENSKIY, N.A.

YEVSTIGNEYEVA, R.P.; BRAYER, Yu.; PREOBRAZHENSKIY, N.A.

Synthesis of emetamine alkaloid. Dokl. AN SSSR 117 no.2:227-229 N '57. (MIRA 11:3)

1. Predstavleno akademikom I.N. Nazarovym.
(Ipecacuanha)

5(3)

SOV/153-58-2-13/30

AUTHORS: Bazilevskaya, G. I., Baynova, M. S., Gura, D. V., Dyumayev, K. M., Preobrazhenskiy, N. A.

TITLE: Synthesis of the Alkaloid Cocaine (Sintez alkaloida kokaina)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1958, Nr 2, pp 75-81 (USSR)

ABSTRACT: At the beginning, use, occurrence, and structural formula of cocaine are repeated. According to the structure theory, four racemic stereoisomers of cocaine are possible: racemic cocaine (Ref 3), racemic pseudo-cocaine (Ref 4), racemic allococaine (Ref 5), and racemic allo-pseudo-cocaine (Refs 5,6), as well as a corresponding number of optically active compounds. Various methods of synthesis for cocaine have been published (Refs 3,7,8-11). In the present paper, the synthesis according to the scheme (Page 76) is described. Pharmacological investigations in the Minskiy meditsinskiy institut (Minsk Medical Institute), carried out by Professor K. S. Shadurskiy and N. A. Iskarev, Graduate Student, on samples of the authors proved that racemic cocaine is not inferior to the natural levorotary cocaine regarding its local-anaesthetic properties (on the

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cornea of the rabbit). But, on the other hand, it is less toxic. The investigations of the latter two scientists (Ref 14) led to the conclusion that it is frequently advisable to use racemic hydrochloric cocaine without cleaving it in antipodes. In the experimental section the synthesis of the following compounds, being cocaine constituents, is described: 1) 2,5--diethoxy-2,5-dihydrofuran (I), 2) 2,5-diethoxy-tetrahydrofuran (II), 3) di-potassium-salt of the monomethylester of acetone-dicarboxylic acid, 4) methyl-ester of the tropan-3-one-2--carboxylic acid (III), 5) the methyl-esters of racemic ecgonine (IV a) and of racemic pseudo-ecgonine (IV b), 6) racemic cocaine (base), 7) racemic hydrochloric cocaine. Conclusions: 1) In this paper the method of synthesis of the salt mentioned in 7) was elaborated. 2) The conditions of condensation of succin-dialdehyde with methylamine and with the salt mentioned in 3) to the compound (III) have been investigated. 3) A method of quantitative determination of compound (III) in the reaction mixture after the formation of the water-insoluble reineckate was suggested. 4) A stereo-oriented reduction of compound (III) to the methyl ester of racemic ecgonine was realized. There are 14 references. 4 of which are Soviet.

Synthesis of the Alkaloid Cocaine SOV/153-58-2-[illegible]

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii (Moscow Institute of Fine Chemical Technology)
Kafedra tekhnologii lekarstvennykh i dushistykh vesnchestv (Chair of Technology of Drugs and Perfumes)

SUBMITTED: October 9, 1957

Card 3/3

5(3)
AUTHORS: Yevstigneyeva, R. P., Malina, Yu. F., [illegible] M. A. 07/153-58-5-1/28

TITLE: Synthesis of Cis and Trans Homocincho Loipone (Sintez tsis- i trans-gomotsinkholoyponov)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Khimiya i khimicheskaya tekhnologiya, 1958, Nr 5, pp 46-51 (USSR)

ABSTRACT: The authors extended the earlier (Refs 1-4, 6, 7) devised synthesis scheme to the compounds of indole structure, as far as alkaloids of this group are of theoretical and practical interest as well (Ref 5). Homocincho loipone and homo merochinene are of importance for the synthesis of the alkaloids of the indole group according to the scheme mentioned. The synthesis of homocincho loipone described in the present paper was carried out on the basis of the diethyl ester of the β-(α'-cyan)-propyl glutaric acid. This ester is the most important semiproduct in the synthesis of the alkaloid emetin (Refs 6, 7). By hydrogenating the said ester 4-carbethoxy methyl-5-ethyl-piperidone-2 (by-product in the emetin production) is obtained in 2 isomeric forms: 1) Crystalline (II-a), and 2) Oily (II-b). The synthesis with these two substances was

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Synthesis of Cis and Trans Homocincho Loipone

carried out separately. The reduction of the said piperidone with lithium aluminum hydride leads to 3-ethyl-4-(β-oxy ethyl)-piperidines (III-a and b). The crystalline piperidone unsoluble in ether was reduced in dioxane, the oily one in ether. By the action of thionyl chloride upon the hydrochlorides of the said piperidines hydrochlorides of the 3-ethyl-4-(β-ethyl chloride)-piperidines are formed. Without isolation these are transformed into N-acetyl-3-ethyl-4-(β-ethyl chloride)-piperidines (IV-a and b). When treating the latter with potassium cyanide N-acetyl-3-ethyl-4-(β-ethyl cyanide)-piperidines (V-a and b) are formed. The saponification of these piperidines finally yields 3-ethyl-4-(β-carboxyl-ethyl)-piperidines, i. e. homocincho loipones (VI-a and b). Chlorine aurates of homocincho loipone were synthesized: a) from the crystalline form of 4-carbethoxy-methyl-5-ethyl-piperidone-2 (II-a) with a melting point of 174.4-175°; b) from the oily form (II-b) with a melting point of 194.5-195°. The structure of the synthesized substances was checked by comparison of the intermediate products (III-a and b) with 3-ethyl-4-(β-oxy ethyl)-piperidine (III-v), which had been synthesized by way of the merochinene stage from natural quinine. As is known, the piperidine products

Synthesis of Cis and Trans Homocincho Loipone

of the cinchona bark-alkaloids maintain their cis configuration. Table (p 48) gives the characteristics of the compounds synthesized. Infrared spectra (Fig p 48, taken by Yu. N. Shenker) proved the identity of the synthesized substances mentioned (III-a, b and v) with those from natural quinine. Based on these spectra as well as on the melting points the authors arrived at the conclusion that the homocincho loipone synthesized from the semi-product corresponds to a cis-configuration, whereas that from the oily type corresponds to a trans-configuration.
There are 1 figure, 1 table, and 7 Soviet references.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni M. V. Lomonosova, Kafedra tekhnologii lekarstvennykh i dushistykh veshchestv (Moscow Institute for Fine Chemical Technology imeni M. V. Lomonosov, Chair of the Technology of Medicinal Substances and Aromatics)

PREOBRAZHENSKIY, N. A.

79-1-35/63

AUTHORS: Gorbacheva, I. N. , Varnakova, L. P. , Kleyner, Ye. M. , Chernova, I. I. , Preobrazhenskiy, N. A.

TITLE: The Synthesis of the Racemic Methyl Ether of o,o-Dibenzyl magnolin (Sintez ratsemicheskogo metilovogo efira o,o-dibenzilmagnolina)

PERIODICAL: Zhurnal Obshchey Khimii, 1958, Vol.28,Nr 1, pp.167-169(USSR)

ABSTRACT: The alkaloid magnolin (formula I, R = R' = H) was liberated together with magnolamine (reference 1) from the leaves of the Caucasian magnolia (Magnolia fusata of the family Magnoliaceae), in the year 1938. The structure of magnolin was determined by the oxidation decomposition of its trimethylether (reference 2) (I, R = R' = CH_3). On that occasion 1-keto-6,7-dimethoxy-2-methyltetrahydroisoquinoline and 2-methoxy-5,4'-dicarboxydiphenylether were separated. The position of the free hydroxyl groups was determined by oxidation of the triethylether of the alkaloid. On the basis of these investigations the formula (I, R = R' = H) was suggested for magnolin. The authors for their part realized the synthesis of the dichlorohydrate of 2'-methoxy-5',4''-[bis-(6-methoxy-7-benzyl-

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The Synthesis of the Racemic Methyl Ether of c,c-Dibenzylmagnolin 79-1-35/63

oxy-2-methyl-1,2,3,4-tetrahydro)-isoquinolyl]-dimethyl-diphenyl-ether (II), which can after removal of the benzyl residue be converted to the (±) methylether of magnolin (I, R =H, R'=CH_3). As initial product for the synthesis the author used the dichloroanhydride of 2-methoxy-5,4'-dicarboxymethyl-diphenyl-ether (III) and β-(3-methoxy-4-benzyloxy)-phenylamine (IV), where the diamide (V) is produced in the presence of potash. Under the influence of pentaphosphorus chloride the latter is converted to the bisdihydroisoquinoline derivative (VI) which is furthermore subjected to a catalytic hydrogenation and methylation by means of formaldehyde in the presence of formic acid. There are 3 references, all of which are Slavic.

ASSOCIATION: Moscow Institute for Fine Chemical Technology imeni M.V. Lomonosov (Moskovskiy institut tonkoy khimicheskoy tekhnologii imeni M. V. Lomonosova)

SUBMITTED: November 24, 1956

AVAILABLE: Library of Congress

Card 2/2

1. Chemistry 2. Methyl esters 3. Enzymes

79-28 3 18/21

AUTHORS: Sarycheva, I. K., Vorobyeva, G. A., Kuznetsova, N. A., Preobrazhenskiy, N. A.

TITLE: A New Synthesis of the 2,6,10,14-Tetramethylhexadecene--15-ols-14 of Isophytene (Novyy sintez 2,6,10,14-tetrametilgeksadetsen-15-ola-14, izofitola)

PERIODICAL: Zhurnal Obshchey Khimii, 1958 Vol. 28, Nr 3, pp. 647-651 (USSR)

ABSTRACT: The method of synthesis of the vitamins E (tokoferolov) and Vitamine K_1 (α-fillokhinona) which have been published until now are based on the utilization of the 2,6,10,14-tetramethylhexadecene-14-ols-16, called phytene, which is only produced of chlorophyll, one kilogram from one ton of chlorophyll (Ref 1) (see the respective reaction process). The known semisyntheses (Ref 2) are based on the utilization of natural terpene- and sesquiterpene alcohols of the aliphatic series and until now have not found considerable application. According to the investigations of vitamins E and K_1 as well as of other natural products it was found that the compound isomeric to phytene namely 2,6,10,14-

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A New Synthesis of the 2,6,10,14-Tetramethylhexadecene- 79-28-3 19/6
-15-ols-14 of Isophytene

tetramethylhexadecene-15-ol-14, the isophytene (formula VII) fully substitutes phytene. (Ref 3). (See reaction process 2 with formula VII !) In the present work a new complete synthesis of isophytene (VII) is realized (see formulae I, II, III, IV, V and VI); as basic material 2,6-dimethylundecadiene-2,6-on-10 and geranylacetone (II) is used which is produced of synthetic linalool (I), either by means of the diketene or the corresponding acetoacetate, or by a reaction using the acetoacetate without the separation of the acetoacetate (II). The 2,6-dimethylundekadiene-2,6-on-10 (II) converts to 2,6,10-trimethyldodekadiene-2,6-in-11-ol-10 by the action of sodiumacetylenide in liquid ammonia. The former is the dehydronerolodene (III) which then reacts with acetoacetate. In this case, different from the known syntheses of phytene and isophytene (VII), the necessary elongation of the carbon chain up to C_{18} is reached in one step. The 2,6,10-trimethylpentadekatetraene-2,6,10,12-on-14 (VI) synthetized this way is hydrated in the presence of a nickel catalyst and converts to the 2,6,10-trimethylpentadekanol-14. The

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A New Synthesis of the 2,6,10,14-Tetramethylhexadecene-
-15-ols-14 of Isophytene 79-28 3-10/61

latter is oxidized with a chromium mixture in acetic acid to 2,6,10-trimethylpentadekanone-14 (V). Furthermore the condensation (V) with sodiumacetylendien realized; the obtained 2,6,10,14-tetramethylhexadecine-15-ol-14 (VI) finally converts to isophytene (VII) by "selective hydration" in the presence of the Lindlar catalyst (Ref 6). There are6 references, 2 of which are Soviet.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii
(Moscow Institute for Chemical Precision Technology)

SUBMITTED: March 14, 1957

Card 3/3

79-28-4-27/60

AUTHORS: Maurit, M. Ye., Precbrazhenskiy, N. A.

TITLE: Synthesis of the N-Methyl-3-Carbomethoxy-4-Oxypiperidines and Investigation of Their Steric Structure (Sintez N-metil-3--karbometoksi-4-oksipiperidinov i izucheniye ikh prostranstvennogo strcyeniya)

PERIODICAL: Zhurnal Obshchey Khimii, 1958, Vol. 28, Nr 4, pp. 968-974 (USSR)

ABSTRACT: In the present paper the authors have investigated different methods of reducing the N-methyl-3-carbomethoxy--4-piperidone (II) into the corresponding piperidole (Ia, Ib) the separation of the isomeric piperidole and the conditions of their dehydration. It has been ascertained that according to the reducer and the reduction conditions methyl ethers of the N-methyl-4-oxypiperidine-3-carbonic acid with different relative contents of steric isomers are developing. Two isomeric N-methyl-3-carbomethoxy-4-oxypiperidines have been separated, the melting points of which were at 86 - 87 °C and 96,5 - 97,5 °C. When investigating the dehydration of the isomeric piperidoles by thionyl chloride it was ascertained that the

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Synthesis of the N-Methyl-3-Carbomethoxy 4-Oxypiperidines and Investigation of Their Steric Structure

piperidole with the melting point at 86 - 87°C forms the basis of the arecoline (II, R = CH_3) and the piperidole with the melting point at 96,5 - 97,5°C forms the N-methyl--3-carbomethoxy-4-chloropiperidine (IV). The difference between the piperidole with the melting point at 86-87°C and that with the melting point at 96-97°C is caused by the cis-(Ia)-trans-(Ib)-isomerism of the N-methyl-3-carbomethoxy-4-oxypiperidines. Nevertheless the problem, which of the configurations is corresponding to the respective oxy derivative is very difficult to solve. As usually it is easier to separate the water from the cis-isomer and the compounds of the cis series have lower melting and boiling points, the piperidole with the melting point at 86--87°C has to be regarded as the cis-(Ia)- and that of the melting point at 96-97°C as the trans-(Ib)-isomer. It was possible to carry out the reduction of the methyl ethers of the isomeric N-methyl-3-carboxy-4-piperidoles by the aid of lithiumalumohydride and in transferring the obtained isomers of the N-methyl-3-oxymethyl--4-oxypiperidine into toluene sulfonates of the O,O'-

Synthesis of the N-Methyl-3-Carbomethoxy-4-Oxypiperidines and Investigation of Their Structure 79-28-4-27/60

-benzilidene-N-methylpiperidine-3-oxymethyl-4-oles. There are 3 references, 2 of which are Soviet.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii (Moscow Institute for Fine Chemical Technology)

SUBMITTED: April 1, 1957

Card 3/3

79-28-4-55/60

AUTHORS: Bazilevskaya, G. I., Gura, D. V., Baynova, M. S., Dyumayev, K. M., Sarycheva, I. K., Preobrazhenskiy, N. A.

TITLE: Synthesis of Tropane-3-α-ol, Tropine (Sintez tropan-3-α-ola, tropina)

PERIODICAL: Zhurnal Obshchey Khimii, 1958, Vol.28, Nr 4, pp.1097-1105 (USSR)

ABSTRACT: The representatives of the tropane group (cocaine, atropine, tropine and also their natural and synthetic derivatives) play a considerable part among alkaloids. The presence of substituents in the pyrrolidine - piperidine grouping causes the possibility of different stereoisomeric forms of the tropane alkaloids. Thus, 4 configurations, and according to it 4 racemic isomers are known for cocaine. It was found that the compounds synthesized in 1956 allococaine, allo-pseudo-cocaine and the tropeines are derivatives of tropane-3-ole of tropine (formula I) while natural cocaine and pseudo-cocaine have the structure of pseudo-tropine (formula II) (Ref 1).

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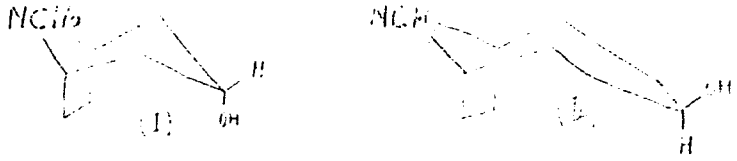
79-28-4-55/60

Synthesis of Tropane 3-ol, Tropine



These two tropane-3-oles can be represented by reduction of the corresponding ketone tropinone. For the production of one or the other isomer not only the selection of the hydration agent but also the conditions of the carrying out of the reaction play an important part. In the present work the sterically directed reduction of tropinone to tropine carried out by the authors is described. Synthesis of tropinone was made by 3 methods described in technical publications: 1) Karrer and Alagil (Ref 6); 2) Willstätter, Wolfes and Mäder (Ref 8); 3) Gal, Simoniy and Tokar (Ref 10). In order to improve these 3 methods some modifications were made. Succinic dialdehyde which is necessary as starting product for the synthesis of tropinone according to the last two methods was represented by the authors according to 4 different methods which are all given in detail. On

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Synthesis of Tropane-3-α-ol, Tropine

this occasion acetylene or ethyl acetal of the bromoaceto-aldehyde or succinic diethyl ester or furane served as starting product. The method of representation based on succinic diethyl ester was elaborated anew by the authors. The authors investigated a series of methods in order to find conditions for a stereo directed reduction of tropinone to tropine; reduction with sodium amalgam as well as electrolytic and catalytic hydration under different conditions. Tropane-3-oles with different content of stereoisomers are formed according to reaction conditions, but only in the presence of a nickel catalyst at 60 atmospheres pressure and 20° they succeeded in obtaining tropine without a content of pseudo-tropine. The thus synthesized tropine proved identical with that isolated from natural alkaloid atropine.

All synthesis reactions mentioned are described in detail in an extensive experimental part. There are 29 references, 1 of which is Soviet.

79-28-4-55/60

Synthesis of Tropane-3-α-ol, Tropine

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii
(Moscow Institute for Fine Chemical Technology)

SUBMITTED: April 18, 1957

Card 4/4

79-28-5-11/69

AUTHORS: Yevstigneyeva, R. P., Kashnikova, N. M., Baynova, M. S., Preobrazhenskiy, N. A.

TITLE: Investigations in the Series of Isoquinoline Compounds (Issledovaniya v ryadu izokhinolinovykh soyedineniy) XII. Synthesis of 4',5'-Dimethoxy-5,6-Dimethyl-7-(1"-Methyl--6",7"-Dimethoxy 1",2",3",4" tetrahydroisoquinolyl)--3,4,5,6,7,8-Hexahydro-Benz-(1',2'; 1,2)-Quinolisine (XII. Sintez 4',5'-dimetoksi-5,6-dimetil-7-(1"-metil-6",7"-dimetoksi--1",2",3",4"-tetragidroizokhinolil)-3,4,5,6,7,8-geksagidro--benz-(1',2';1,2)khinolizina)

PERIODICAL: Zhurnal Obshchey Khimii, 1958, Vol. 28, Nr 5, pp. 1184 - 1189 (USSR)

ABSTRACT: One of the most interesting properties of the alkaloid emetine (formula I of scheme 1) is its capability to convert into the red-colored compound, the so-called rubremetine (Reference 1-3) on the action of light oxidizing agents. Its structure has hitherto not been determined although some proposals in this respect were uttered (Reference 4-8). The most probable

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formulae of those suggested for rubremetine demand the formation of a ring system with the hydrocarbon atom C_8 taking part in it. The formation of such a system would be very difficult in the presence of the substituent of the above-mentioned carbon atom, as has to be assumed. In order to carry out a more detailed investigation of the influence of the ring substituent on the formation of rubremetine the authors carried out the synthesis of two analogs of emetine which have two alkyl substituents in two free positions at the carbon atoms C_5 and C_8, namely: of 4',5'-dimethoxy-5,6-dimethyl-7-(1"-methyl-6",7"-dimethoxy-1",2",3",4"-tetrahydroisoquinolyl)-3,4,5,6,7,8-hexahydro-benz-(1'2' : 1,2)-quinolisine (IV) and of 2) 8-methyl-emetine (V) (see scheme 2). The synthesis of the former is the subject of this report. The compound (IV) is also of interest because it corresponds to one of the assumed structures. As a basis for the synthesis the scheme 3 elaborated for emetine (Reference 9) was used. Thus the synthesis of the 4,5'-dimethoxy-5,6-dimethyl-7-

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-(1"-methyl-6",7"-dimethoxy-1",2",3",4"-tetrahydroisoquinolyl)--3,4,5,6,7,8-hexahydro-benz(1',2' : 1,2)- quinolisine analogous to emetine was realized. The authors obtained a rubro--compound in the oxidation with bromine of the product analogous to emetine and thus proved that the substituent at the carbon atom C_5 does not impede the formation of a rubremitine analog. There are 1 figure and 9 references, 1 of which is Soviet.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii (Moscow Institute for Fine Chemical Technology)

SUBMITTED: April 18, 1957

79-28-5-12/69

AUTHORS: Yevstigneyeva, R.P., Lavrova, L.V., Zarankina, Ts. D., Preobrazhenskiy, N. A.

TITLE: Investigations in the Series of Isoquinoline Compounds (Issledovaniya v ryadu izokhinolinovykh soyedineniy) XIII. Synthesis of 8-Methylemetine (XIII. Sintez 8-metilemetina)

PERIODICAL: Zhurnal Obshchey Khimii, 1958, Vol. 28, Nr 5, pp. 1190-1196, (USSR)

ABSTRACT: The synthesis of 8-methylemetine was carried out in order to explain the influence of the alkyl substituent at the carbon atom C_8 in the molecule of emetine on the formation of the rubro compound. For the synthesis of 8-methylemetine that scheme elaborated for the production of emetine served as scheme (ref. 1). (see reaction process in the mentioned scheme)! The final product, the desired 8-methylemetine (XIII) separates in the end in form of a light-yellow oil. By treating the ether solution of 8-methylemetine with an ether saturated with hydrogen chloride a chlorine hydrate is obtained

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in form of a colorless amorphous powder. A crystalline chlorine hydrate could not be obtained as it is extremely soluble in alcohol. In the case of the oxidation of the basic 8-methylemetine (XIII) with bromine and iodine no rubro-compounds could be synthetized. The oxidation with bromine yielded a slightly yellowish, and that with iodine a yellow amorphous product. The ultraviolet spectra (see figure) of these compounds remind intensely of the spectra of the salts of psychotrine which, as is known, represents an intermediate product in the oxidation of emetine in its conversion to rubroemitine. Thus the presence of an alkyl substituent at the carbon atom C_8 hampers the formation of a rubro compound, which proves the participation of the carbon atom C_8 in the formation process of rubremetine. There are 1 figure and 3 references, 2 of which are Soviet.

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Investigations in the Series or Isoquinoline Compounds. XIII. Synthesis of 8-methylemetine

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii (Moscow Institute for Fine Chemical Technology)

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Card 3/3

YEVSTIGNEYEVA, R.P.; GLUSHKOV, R.G.; PREOBRAZHENSKIY, N.A.

Isoquinoline compounds. Part 15: Synthesis of isomeric o-methyl-psychotrines. Zhur. ob. khim. 28 no.9:2463-2472 S '58.
(MIRA 11:11)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii.
(Alkaloids) (Phychotrine)

SOV/79-28-11-11/55

AUTHORS: Ch'en Ch'ang-pai, Yevstigneyeva, R.P., Preobrazhenskiy, N.A.

TITLE: Synthesis of the 2-(α-Pyridyl)-3-(β-Oxyethyl)-Indole (Sintez 2-(α-piridil)-3-(β-oksietil)-indola)

PERIODICAL: Zhurnal obshchey khimii, 1958, Vol 28, Nr 11, pp 3085-3090 (USSR)

ABSTRACT: The scope of the present paper is the synthesis of the most important quinalcaloids of the indole group, the cinchonamines. First the synthesis of the 2-(α-pyridyl)-3-(β-oxy-ethyl)-indole (III), an analog of cinchonamine according to scheme 1 is described, which leads to the synthesis of cinchona. The condensation of the γ-butyrolactone (IV) with the ester of the picolinic acid (V) yields the lactone (VI), which with hydrochloric acid is transformed into the ketone (VII). Its phenyl hydrazone (VIII) is obtained in two isomeric forms differing with respect to their physico-chemical properties. The ultraviolet absorption spectra of the two isomers in ethyl alcohol are the same, but the absorption maxima of the α-isomer are displaced to the side of the short waves, as compared to those of the β-isomer (Fig 1). The β-isomer of the phenyl hydrazone is of higher basicity than the α-isomer and contrary to the latter loses easily a molecule of water on its heating in vacuum; this may be due to the fact that the hydroxyl

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group and the hydrogen in secondary nitrogen are close to each other and can easily separate in form of water under the formation of a six-membered cycle (AI). From this follows that the cis-compound (IX) must be attributed to the α-isomer and the anti-configuration (X) to the β-isomer as regards the α-pyridyl group. The α-isomer of the phenyl hydrazone of ketone (VII) in spite of all attempts could not be transformed into the indole derivative. On heating the hydrochloride of the phenyl hydrazone of the α-pyridyl-ω-oxy-propyl ketone (of the β-isomer) with concentrated hydrochloric acid the 2-(α-pyridyl)-3-(β'-oxy-ethyl)-indole (III) was separated from the reaction mass, which was proved by its ultraviolet absorption spectrum (Fig 2) that points to the presence of the indole nucleus. The analogous scheme based on the condensation of the γ-butyrolactone with the ethyl ester of 3-vinyl quinuclaidine carboxylic acid-6 made it possible to the authors to realize finally the synthesis of the alkaloid cinchonamine.- There are 2 figures and 3 references.

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Synthesis of the 2-(α-Pyridyl)-3-(β-Oxyethyl)-Indole SOV/79-28-11-41/55

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii
(Moscow Institute of Fine Chemical Technology)

SUBMITTED: September 13, 1957

Card 3/3

SOV/79-28-12-36/41

AUTHORS: Tolkachev, O. N., Voronin, V. G., Preobrazhenskiy, M. A.

TITLE: Synthesis of Bromine-Substituted β-Phenyl-Ethyl Amines (Sintez bromzameshchennykh β-feniletilaminov)

PERIODICAL: Zhurnal obshchey khimii, 1958, Vol 28, Nr 12, pp 3320 - 3323 (USSR)

ABSTRACT: β-(3-methoxy-4-oxy-5-bromo-phenyl)-ethyl amine (I) is an important intermediate product in the synthesis of dimethyl ether of the racemic alkaloid tubocurarine iodide (Ref 1). The synthesis of compounds of similar structure takes place in several steps and offers small yields (Refs 2-4). As the orientation in the halogenation (especially bromination) in similar molecules is not sufficiently explained the working out of the bromination of the substituted β-phenyl-ethyl amine is of certain importance to obtain the necessary bromine derivatives. Some chemists showed that from eugenol, isoeugenol, and olivine (Refs 5-8) 5-bromine-containing derivatives could be obtained, whereas from creosol (Refs 9, 10) and homovanillic acid (Ref 11) as well as from dimethoxy, dibenzyloxy, and other derivatives 6-bromine isomers are formed (Refs 12-18).

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It may be concluded therefrom that in the bromination the positions C_5 and C_6 are probable. In carrying out the reaction without solvents a mixture of these isomers and a small amount of the dibromine product were formed. Compound(I) in practically pure state is obtained by the bromination of compound (II) in acetic acid solution, as well as by the reduction of the compound (III) with aluminum-lithium hydride (Scheme 1). It was shown that the bromination of the acid sulfate of β-(3-methoxy-4-oxy-phenyl)-ethyl amine leads to the 6-bromine isomer. The hitherto unknown β-(3,4-dimethoxy-6-bromo-phenyl)-ethyl amine and 3-bromo tyramine (XII) were synthesized as well. There are 23 references, 3 of which are Soviet.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii(Moscow Institute of Fine Chemical Technology)

SUBMITTED: October 23, 1957

Card 2/2

SOV/2c-121-3-17/47

AUTHORS: Voronin, V. G., Tolkachev, O. N., Preobrazhenskiy, N. A.

TITLE: The Synthesis of Methyl Ethers of Isomeric Chondrofolines, Chondodendrines and Tubocurarines (Sintez metilovykh efirov izomernykh khondrofolinov, khondodendrinov i tubokurarinov)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol. 121, Nr 3, pp.455-457 (USSR)

ABSTRACT: Observing a molecule of d-tubocurarine (I) (Ref 1) two asymmetry centers can be seen. According to the classical theory this would imply the existence of two racemic forms and of four optically active isomers. Taking into account the fundemental theorems of conformation analysis of a tertiary base namely of chondodendrine and its quaternary salt tubocurarine four racemic formulae could be assumed solely because of the existence of isomery in the case of C_1 and C_1'''.

As a result of the cis- and trans-positions of the substituents on the nitrogen atom of tertiary bases and because of the conformation of tetra-hydro-isoquinoline nuclei the mentioned formulae of the main alkaloids of the tube curare do not

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yet exhibit any isomery. Clear data on the configuration of tetra-hydro-isoquinolines are lacking in publications. According to latest papers it may be assumed that the nuclei of these compounds may exist in various shapes (chair-, tub shape) which are distorted as a result of the presence of an aromatic cycle in the condensed system of the mentioned nucleus. These types of isomery apparently occur also in curare alkaloids. That implies a corresponding increase of the amount of possible isomers. Moreover, that amount may further increase in consequence of the non-planar structure of the microcyclic diether system which cannot be clearly classified. The authors worked out the synthesis system of the substances mentioned in the title. This scheme is distinguished by the fact that the asymmetry centers do not occur before the last stages of synthesis. The latter are carried out under milder conditions which do not result in any isomerizations, transformations etc. Thus, by selection of suitable conditions the authors succeeded in carrying out the synthesis of 2 isomeric O-methyl-chondrofolines, 2 isomeric O,O'-dimethyl-chondodendrines and 4 isomeric O,O'-di-

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methyl-tubocurarine-iodides. The process of synthesis and several produced salts of the mentioned substances are mentioned together with structure schemes. There are 1 figure, and 1 reference, 1 of which is Soviet.

ASSOCIATION: Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M. V. Lomonosova (Moscow Institute of Fine Chemical Technology imeni M. V. Lomonosov)

PRESENTED: March 7, 1958, by A. N. Nesmeyanov, Member, Academy of Sciences, USSR

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